


LIBRARY

AUG 05 1988

ILL. STATE GEOLOGICAL SURV.



Digitized by the Internet Archive
in 2012 with funding from
University of Illinois Urbana-Champaign



Map showing the oil and gas fields of Southeastern Illinois and the quadrangles covered by this report.

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY
FRANK W. DeWOLF, Director

BULLETIN No. 22

THE OIL FIELDS

OF

Crawford and Lawrence Counties

BY

RAYMOND S. BLATCHLEY



URBANA
University of Illinois
1913



SPRINGFIELD, ILL.
ILLINOIS STATE JOURNAL CO., STATE PRINTERS
1913

STATE GEOLOGICAL COMMISSION.

EDWARD F. DUNNE, *Chairman*,
Governor of Illinois.

THOMAS C. CHAMBERLIN, *Vice-Chairman*.

EDMUND J. JAMES, *Secretary*,
President of the University of Illinois.

FRANK W. DEWOLF, *Director*.
FRED H. KAY, *Ass't. State Geologist*.

CONTENTS.

CHAPTER I.

Historical, Theoretical, and Geological Aspects of the Illinois Fields.

	PAGE.
Object of report.....	11
Methods of study.....	11
Acknowledgments.....	12
Historical review of oil developments in Illinois.....	12
Original and accumulation of oil.....	16
Origin of oil.....	16
The inorganic theory.....	16
The organic theory.....	17
Circulation and accumulation of oil.....	18
General considerations.....	18
The porous stratum.....	21
Impervious cover.....	22
Geological structure.....	22
Water saturation.....	24
General geology of Illinois relating to oil and gas.....	24
Introduction.....	24
Stratigraphy.....	25
Areal extent of the formations and oil sands.....	27
Structure.....	32
Stratigraphy of Crawford and Lawrence counties.....	32
General statement.....	32
Crawford county.....	32
Logs.....	33
Stratigraphy.....	52
Pleistocene.....	52
Pennsylvanian.....	53
McLeansboro formation.....	53
Carbondale formation.....	53
Pottsville formation.....	54
Lawrence county.....	54
Logs.....	54
Stratigraphy.....	82
Pleistocene.....	82
Pennsylvanian.....	82
McLeansboro and Carbondale formations.....	82
Pottsville formation.....	82
Mississippian.....	83
Birdsville and Tribune formations (upper portion of Chester group).....	83
Ste. Genevieve formation.....	84
St. Louis formation.....	85

CHAPTER II.

General Description of Features of the Main Oil Fields.

Introduction.....	86
Field work.....	86
Topographic surveys of the area.....	86
Levels in the oil fields.....	87
Hardinville quadrangle.....	87
Sumner quadrangle.....	89

Contents—Continued.

	PAGE.
<i>Field work</i> —Concluded.	
Geographic positions of quadrangles.....	91
Hardinville quadrangle.....	91
Sumner quadrangle.....	93
Vincennes quadrangle.....	93
Elevations of oil wells.....	94
Collection of well records.....	94
Geological aspects.....	95
General statement.....	95
Local names of sands.....	95
Correlation of sands.....	95
Altitudes of sands.....	95
Tables of well data.....	96
Contour maps.....	96
Cross-sections.....	96

CHAPTER III.

Detailed Geology of the Crawford County Field.

General features of the oil field.....	97
Detailed structure of the district.....	99
Relations of structure to oil and gas.....	100
Relations of salt water to structure.....	103
Conclusion.....	104

CHAPTER IV.

Detailed Geology of the Lawrence County Field.

General features of the oil field.....	105
Detailed structure of the district.....	106
The "shallow" sand.....	106
Bridgeport sand.....	106
Buchanan sand.....	107
Detailed structure.....	107
"Gas" sand.....	108
Detailed structure.....	109
Kirkwood sand.....	109
Detailed structure.....	110
Tracey sand.....	111
Detailed structure.....	112
McCloskey sand.....	112
Detailed structure.....	113
Cross-sections.....	114
General statement.....	114
Cross-section A-A.....	114
Logs.....	115
Cross-section B-B.....	123
Logs.....	123
Cross-section C-C.....	125
Logs.....	125
Cross-section D-D.....	130
Logs.....	130
Relations of structure to oil and gas.....	135
Oil.....	135
Petty township.....	136
Bridgeport township.....	137
Lawrence township.....	137
Dennison township.....	137
Gas.....	138
Petty township.....	139
Bridgeport township.....	139
Lawrence township.....	140
Dennison township.....	140

Contents—Concluded.

	PAGE.
Relations of structure to salt water.....	140
Petty township.....	140
Bridgeport township.....	140
Lawrence township.....	140
Dennison township.....	141

CHAPTER V.

General Summary of Geological Conditions in Crawford and Lawrence Counties.

General statement.....	142
General structure of the region of the LaSalle anticline.....	142
Detailed features of the fields.....	143
Prospective pools.....	144

CHAPTER VI.

Economic Features of the Illinois Fields.

Introduction.....	145
Development of oil properties.....	146
Forenote.....	146
Leasing.....	147
Choosing a well-site.....	151
Drilling.....	151
Shooting a well.....	155
Lease equipment.....	157
Cleaning out and tubing the well.....	157
Tanks.....	157
Loading racks.....	158
Power and boiler houses.....	158
Pull-rods and pumping discs.....	159
Pumping jacks.....	159
Removal of salt water and steaming oil.....	159
The approximate cost of oil wells.....	160
The cost of operating a lease.....	161
Investments in oil properties.....	162
Buying, transporting, and storing oil.....	163
Buying oil.....	163
Transport'ng the oil.....	164
Storing the oil.....	165
Independent oil companies.....	166
Prices and pipe-line runs of Illinois oil.....	167
Prices of Illinois oil.....	167
Pipe-line runs and stocks of Illinois oil.....	169
Summary tables.....	169
Natural gas in Illinois.....	181
Tables of well data (appendix).....	185

ILLUSTRATIONS.

PLATE.	PAGE.
1A. Map showing the oil and gas fields of Southeastern Illinois and the quadrangles covered by this report.....	Frontispiece
1B. Section across southern Illinois through, Monroe, Clinton and Lawrence counties.....	32
II. Columnar sections in Crawford county.....	34
IIIA. Columnar sections in Lawrence county.....	54
IIIB. Diagram showing correlation of the Robinson and Bridgeport sands.....	84
IV. Base map of the Crawford county oil field—Southern half—showing developments to Jan. 1, 1909.....	Pocket
V. Crawford county oil field showing structure contours on top of the Robinson sand—first lens.....	Pocket
VI. Base map of the Lawrence county oil field showing development to July 1, 1911....	Pocket
VII. Lawrence county oil field showing structure contours on top of the Buchanan sand.	Pocket
VIII. Lawrence county oil field showing structure contours on top of the "Gas" sand....	Pocket
IX. Lawrence county oil field showing structure contours on top of the Kirkwood sand.	Pocket
X. Lawrence county oil field showing structure contours on top of the Tracey sand....	Pocket
XI. Lawrence county oil field showing structure contours on top of the McClosky sand..	Pocket
XII. A-A longitudinal section, Lawrence county, along the crest of the LaSalle anticline and through the center of the field.....	116
XIII. B-B cross-section, Lawrence county, across the northern end of the oil field.....	124
XIV. C-C cross-section, Lawrence county, across the structural dome in Petty township..	126
XV. D-D cross-section, Lawrence county, across the southern end of the oil field.....	132
XVI. The standard derrick.....	146
XVII. The steel derrick.....	148
XXVIII. A—A nitroglycerine plant.....	150
B A storage magazine for nitroglycerine.....	150
XIX. A—Oil tanks under shed.....	152
B—A pumping disc.....	152
XX. A—A modern tank-car loading rack.....	154
B—An early tank-car loading rack.....	154
XXI. A—A power or pumping house.....	156
B—A boiler house.....	156
XXII. A—The standard pumping jack.....	158
B—The steel pumping jack.....	158
XXIII. A—A third type of pumping jacks.....	160
B—A town lot well in Bridgeport, Ill.....	160
XXIV. A—A waste pit for burning waste oil.....	162
B—The effect of fire from waste oil on streams.....	162
XXV. A—The Ohio Oil Company's pumping station, Stoy, Ill.....	164
B—The Tidewater Pipe Line Company's pumping station, Stoy, Ill.....	164
XXVI. The Ohio Oil Company's pumping station, Bridgeport, Ill.....	166
XXVII. A—A portion of the Ohio Oil Company's tank farm, Stoy, Ill.....	168
B—A cleaning rig.....	168
XXVIII. A 35,000 bbl., tank fire.....	170
XXIX. The tank after the fire.....	172
XXX. A supply yard in Bridgeport.....	174
XXXI. A—A gas well.....	176
B—A gas well with water retainer.....	176

LETTER OF TRANSMITTAL.

STATE GEOLOGICAL SURVEY,
UNIVERSITY OF ILLINOIS, JANUARY 30, 1913.

Governor E. F. Dunne, Chairman, and Members of the Geological Commission:

GENTLEMEN—I submit herewith a report on the oil fields of Crawford and Lawrence counties, Illinois, and recommend that it be published as Bulletin No. 22.

The author, Mr. Raymond S. Blatchley, has been on the staff of the survey since 1908 and has devoted a large part of three years to the studies presented here.

The colored maps which accompany the report present information of great commercial value in locating future wells in the district. The kindness of property owners and oil operators who have contributed information freely to the survey is hereby acknowledged, and confidence is expressed that they will find the report almost invaluable.

Very respectfully,

FRANK W. DEWOLF,
Director.

THE OIL FIELDS OF CRAWFORD AND LAWRENCE COUNTIES, ILLINOIS.

By Raymond S. Blatchley.

CHAPTER I.

Historical, Theoretical, and Geological Aspects of the Illinois Fields

OBJECT OF REPORT.

This report presents the results of a study of the geologic conditions in the southern half of the eastern Illinois oil fields. The specific area of investigation lies in the southern half of Crawford and the northern portion of Lawrence counties, in portions of the Hardinville, Sumner, and Vincennes quadrangles (See Plate IA.) The object is to discuss the control of the accumulation of oil and gas in these fields and to present facts which further confirm the anticlinal or structural theory for the concentration of oil and gas in raised formations. It is also possible that additional proof is added to support the theory of the origin of oil from organic remains buried in limestone and shales. The report also discusses the stratigraphy and describes the commercial features peculiar to this territory, including production, costs, methods of transportation and storage, field operations, leasing, etc. It is desired to preserve in printed form all available records of the territory, particularly for use in future stratigraphic and structural studies and for reference by the operators.

METHODS OF STUDY.

The method of study was to map by means of contour lines, or lines through points of equal altitude, the geologic structure of the producing sands. The contours were made upon the positive altitudes of the sands above a datum plane 1,500 feet below mean sea level. These maps show the oil sand as if everything above it had been removed. The undulations, slopes, basins, etc., are clearly defined. In this way the oil, gas, and water relations to the structure are studied. In addition to the contour maps cross-sections were made along the crest of the anticline and crosswise to it. These graphic sections are intended merely to make

clearer the contour maps. The records along the selected lines are plotted on a uniform scale and are placed in their proper positions along the section, with regard both to the elevation of the wells above sea level and to their linear distance from one another. The points at which the cross-section lines cut the contours are measured and marked on the section. All points representing a particular horizon are connected. Thus, a mechanical means of ascertaining structural features was developed and significant facts were revealed.

ACKNOWLEDGMENTS.

The taking of elevations and logs of the wells within the portion of the oil fields covered by this report began in the summer of 1908. The writer was assisted in this work by Douglas Wright in the Crawford county portion of the Hardinville quadrangle and by J. C. Jones in the Lawrence county division. The leveling in the Sumner and Vincennes quadrangles was completed the following summer with the assistance of W. E. Deuchler, levelman, and Douglas Wright and H. H. Johnson, rodmen. A final review of the Lawrence county fields was made in 1911 with the assistance of D. G. Thompson. The report would not have been possible except for the hearty coöperation of all operators who furnished well records, maps, and other information. Much help was given in the stratigraphic studies by Dr. J. A. Udden who made an intimate examination of well samples from eleven wells within the investigated area. Special thanks are due the officials of the Ohio Oil Company, Marshall, Ill., for samples from a number of wells in the region. These were saved at much trouble and expense. Dr. Stuart Weller of the University of Chicago gave helpful consultation relative to the stratigraphy of the Mississippian rocks. To all of these individuals the writer expresses his appreciation and thanks.

HISTORICAL REVIEW OF OIL DEVELOPMENTS IN ILLINOIS.

In the main fields of Illinois, exclusive of producing areas elsewhere, there have been drilled, during the past seven years, over 20,000 wells in a producing territory which covers about 250 square miles. The following notes sketch the history of drilling from the earliest days:

In the earlier part of the "sixties" the first oil excitement spread over the eastern United States and extended westward to Illinois. In 1865 the first wild-cattling took place in Clark county about 8 miles north of Casey, in Parker township. Here, several holes were put down in attempts to locate oil and gas but the work was abandoned. The small amount of oil found in the wells perhaps would have been greater had proper casing been used. This would have shut off the salt water, which, as a matter of fact, probably drowned out the oil and prevented an earlier discovery of the present immense field.

About this time, oil and gas were found accidentally in Montgomery county, near Litchfield. Coal prospecting from the floor of one of the mines led to deeper drilling and the discovery of a strong flow of salt water which threatened for a time to flood the mine. Another coal pros-

pect near the mine discovered a small quantity of oil and gas. The oil and water from this drill hole leaked into a sump in the mine, where for many years oil was skimmed from the top of the water and utilized.

During the "eighties," when new prospecting was taking place at various points in Illinois, the previous finding of oil at Litchfield led to renewed drilling which brought in several gas wells in that vicinity. In 1882 a well was drilled about 2 miles south of Litchfield, which was reported to show about 400 pounds gas pressure. This well was apparently first drilled to 580 feet without success. Two years later it was drilled 200 feet deeper, where water-bearing sand was tapped. The gas was secured at 640 feet and had exceptional pressure. The flow of salt water, however, was too strong to be plugged successfully and, consequently, drowned out the gas. In 1886 a number of wells that yielded both gas and oil were drilled in the vicinity of Litchfield, to an average depth of about 650 feet. In all, between the years of 1882 and 1889, about thirty wells were drilled.¹ The majority of them were of short life but five or six produced a small amount of oil up to the year 1903. All are abandoned at the present time.

Gas was discovered in Pike county in 1886 while drilling for water in the N. W. $\frac{1}{4}$ S. E. $\frac{1}{4}$ section 1, Derry township. It was found at a depth of 186 feet.² This destroyed chances of a good water supply so a second well was drilled on the same farm a short while afterwards. Gas was secured in this well at the lesser depth of 168 feet. Both wells were abandoned because of lack of facilities for taking care of the gas. Drilling was then suspended in this part of the State for 15 years, or until 1905. In that year Mr. William Irick drilled a well for water on his farm and, as in the previous cases, met a strong flow of gas. He, however, piped it to his house for domestic use. There immediately followed a development of this area, which, in a little over a year, brought in over thirty wells. All but six of these produced gas, but no oil was found. The gas horizons are between 75 and 350 feet below the surface. The field at the present time covers an area about 10 miles long and 4 miles wide. The gas accumulation is governed by a small fold in the Niagara limestone.

Similar prospecting took place in 1888 near Sparta in Randolph county. Home capital was enlisted and a well that yielded a good pressure of gas³ was drilled to a depth of 850 feet. This encouraged further drilling and up to the year 1894, 22 wells were put down. Of these, over twelve yielded gas, and four of them had initial pressures between 150 and 250 pounds to the square inch. The average life of the wells was about seven years.

The next recorded wild-cattng took place in 1900, and indirectly resulted in the discovery of the main oil field. A company styled the Crawford County Oil, Gas and Coal Company drilled a well in the S. E. $\frac{1}{4}$ section 35, Robinson township, Crawford county.⁴ The well reached a depth of 820 feet where it was abandoned because of the caving of the strata and the tapping of a strong vein of salt water. The same company shifted operations in the following year, 1901, to the D. C.

¹ Mineral Resources of the United States for 1889, p. 353.

² Savage, T. E., Pike County gas field: Bull. Ill. Geol. Survey No. 2, 1906, p. 83.

³ Report Illinois Board World's Fair Commissioners, 1893, p. 183.

⁴ Blatchley, W. S., Oil Developments in Illinois to 1904: Bull. Ill. Geol. Survey No. 2, 1906, p. 14.

Jones farm, in the southwest quarter of section 22 of the same township. A well drilled here to a depth of 1,040 feet secured a small amount of gas. Thus, the efforts of the company to locate "fuel" were rewarded slightly and with further hope, they drilled to 1,190 feet. At this point they met a strong vein of salt water and abandoned the well. The company attempted other wells on the same farm in the years 1901, 1902 and 1903, but, in each case, lost their tools. The sixth attempt was rewarded, in 1904, by the finding of small amounts of oil and gas between 900 and 1,200 feet. The bore was carried to 1,330 feet but was abandoned. It was but eighteen months after this that the main productive field was opened up within a few miles of this area.

The suggestion of an oil field in the vicinity of Casey prompted by the earlier prospecting of the "sixties," led Col. L. D. Carter of Oakland, Ill., to secure the services of J. J. Hoblitzel & Son, of Pittsburgh, Pa., in re-drilling this area. A large block of lease was gathered up, and early in the spring of 1904 a well was started on the Young farm near Oilfield. This well produced a good pressure of gas and some oil. The gas was cased off and used for field operations but the oil yield was insignificant and was discarded. A second well was completed in the same year on the J. S. Phillips farm in the northeast quarter of section 18, Parker township. It produced 35 barrels of oil. Other wells were started in the same year in this vicinity and in 1905 about 100 square miles of territory was being drilled. Of this about 60 square miles were eventually found productive. These fields are called the "shallow" area because the oil comes from a depth of between 400 and 600 feet. Drilling was active until 1909, when the boundaries of the productive territory for this section of the oil fields were pretty well established. In 1909 there was a decreasing development and at the present time it has practically ceased. A great many of the original wells are yielding so poorly that they are rapidly being plugged and abandoned.

Added vigor was given to the development of the eastern Illinois fields on February 6, 1906, when D. T. Finley, of Pittsburgh, drilled a well on the J. W. Shire farm in the northwest quarter of section 15, Oblong township, Crawford county. The oil was obtained at 890 feet, and the initial production was 250 barrels per day. This well opened up the Robinson pool, which is the largest in the oil area and covers, in all, about 110 square miles of productive territory. The oil is found in sands ranging from 750 to 1,000 feet in depth. There is one general sand made up of three or more generally parallel lenses. There are, however, small areas where only two or even one lens are noted.

The year 1907 brought an extension of development in a small isolated pool about three miles to the southeast of the large Robinson pool. The new pool was known first as the Honey Creek district and originally covered but six or seven square miles. It has later been associated with the Flat Rock district to the east and the two are now joined, so as to comprise about 25 square miles of area. To the north of the Flat Rock area the small Duncanville pool was developed. The area covered is between two and three square miles. The oil is from about the same horizon as that of the Honey creek, Flat Rock, and Robinson sands but has a much lower gravity. It is used almost exclusively for fuel.

The Lawrence county field began to be developed actively in 1907-1908. It has been the most promising, in that seven sands are attracting the attention of operators. The sands occur between depths of 800 and 1,900 feet and are known as follows:

- 1, 2 and 3. Bridgeport, upper lens, middle lens and lower lens.
4. Buchanan.
5. Kirkwood.
6. Tracey.
7. McClosky.

Within this area, which covers about 40 square miles, there has been developed a larger per cent of big wells than in all other pools in Illinois combined.

After the Clark county fields was brought in miscellaneous drilling was stimulated throughout the State. A second attempt was made to discover oil in the vicinity of Sparta, Ill. by J. J. Hoblitzell & Son, who began drilling in 1906. As a result of this work, two or three wells that produced oil in small quantity were completed in the following year. In 1908 a total of sixteen wells had been drilled, but of these only six or seven yielded oil. The amounts were small, except in the case of two wells, one on the Foster farm that yielded about twenty barrels of oil per day, and one on the McIlroy farm that had an initial production of about 100 barrels. All the wells have since declined and the field is now abandoned.

In 1906 an attempt was made to locate oil at Tolono in Champaign county. The drilling revealed oil, but only in slight quantity. Apparently it was the intention to prospect the LaSalle anticline which gives rise to the production area to the southeast.

Early in the year 1908, oil was reported as seeping through a fault into a coal mine near Centralia, Marion county. The attention of oil operators was excited and several shallow wells were drilled. These yielded small amounts of oil, but were of slight commercial value. Wild-catting was prompted in the winter of 1909 in the vicinity of Sandoval, five miles north of the Centralia shallow wells. Late in March, a deep well, which yielded about thirty barrels per day, was completed upon the Stein farm, one mile north of Sandoval. A second well was finished in July on the Benoist farm, adjoining the Stein land. This well proved to be a valuable producer of both oil and gas. Its success stimulated wholesale leasing and drilling in all directions in Marion county, with the result that a small, but rich, isolated, field of about three-fourths of a square mile was defined. This field is still credited with a good production.

A new gas area was opened in 1909 near Carlinville, Macoupin county, by the Impromptu Exploration Company. Several wells have been drilled south of the town. The gas comes from a sandstone, probably the Pottsville, immediately above the Mississippian limestones. So far, two wells have produced about six barrels of oil per day. The pressures of gas are not large enough to warrant an extended development for commercial purposes.

A small gas area, similar to that of Carlinville, was also opened in the spring of 1910 several miles east of Jacksonville, Ill. The wells were small in quantity. Late in 1911 two other small oil wells were added to the field.

In April of 1911 wild-catting developed an oil field about three miles northwest of Carlyle, Ill., which has since been defined within an area of about $1\frac{1}{2}$ square miles. The governing structure of the field seems to be an elongated dome interrupting the gentle trend of the broad western flank of the Illinois basin. The initial production of the first wells was excellent and caused a rush to the territory. High bonuses were paid for leases many miles from proven territory which later proved barren. The area was suggested as promising by the State Geological Survey previous to exploitation.¹

Various other attempts have been made to find oil at widely separated points. Small amounts of oil or gas have been observed in such localities as Mascoutah, Marissa, Waverly, Greenville, Decatur, Iola, Eldorado, Old Ripley, Patton, Bartelso, Ridgeway, Campbell's Hill, and Denny. Barren wells have been put down at Herrick, Cobden, the American bottoms east of St. Louis, Trenton, Aviston, Iuka, Olney, Sumner, Albion, Carmi, Duquoin, Pinckneyville, Coulterville, Vandalia, Marshall, Thomasboro, Grafton, Jerseyville, Kane, Richview, Nashville, Omaha, Waterloo, Hansen, Pocahontas, and at a number of other places.

ORIGIN AND ACCUMULATION OF OIL.

ORIGIN OF OIL.

The origin of oil and gas has been a puzzling problem for many years, especially since petroleum has come into world-wide use. Chemists and geologists have attacked the problem from their respective points of view and have presented plausible theories, none of which, however, have explained satisfactorily the broad distribution of petroleum in all kinds of sedimentary rocks of various ages.

The chemist has produced many of the component parts of petroleum in the laboratory; he has broken down certain substances into constituents, some of which have properties resembling those of crude petroleum; and he even reproduced certain isometric forms of hydrocarbons peculiar to petroleum—yet the theories arising from these results fail to meet certain geological conditions that prohibit their acceptance.

Geologists have met the problem from a different point of view. Some, on the one hand, have considered the conditions of deposition of sedimentary rocks and have concluded that oil and gas originate from animal and plant life buried in the sediments. Others have conjectured on the internal conditions of the earth during its stages of cooling and settling and have concluded that oil originated from mineral substances. This attitude is closely allied to the chemist's point of view. The geologist's views are not wholly acceptable and hence the origin of petroleum remains uncertain. The whole problem has resolved itself into two general theories styled the *inorganic* and the *organic*.

THE INORGANIC THEORY.

The inorganic theory was promoted by the discovery that the carbides of certain metals may be broken up into hydrocarbons by the action of water and that alkaline metals produce hydrocarbons if brought into con-

¹ Blatchley, R. S., Ill. State Geol. Survey, Bull. No. 16, pp. 87 and 167.

tact with water saturated with carbon dioxide gas. It was claimed that volcanoes, geysers, and hot springs indicate heat within the interior of the earth sufficient to have formed carbides; and that these were broken up by percolating waters into migrating gases. The presence of hydrocarbons in volcanic gases may thus be explained. Such migrating gases on passing from hot formations to higher, cooler, strata would naturally be condensed into petroleum.

It is claimed that granitic rocks are full of joint planes and other minute cracks, and thus it is impossible for the gas and oil to remain in them because of the ease with which they travel and diffuse. When the shales are reached the oil "simplifies" itself or, in other terms, it leaves more or less of its more viscous constituents behind. It is claimed that the oil of various American fields, with exception of those like the California and Texas fields, has migrated from a distance to the localities in which they now are found. The fact that all oil fields are confined to sedimentary strata and that below the oil-bearing horizons there frequently are unproductive strata of the same nature makes it difficult to understand how the inorganic theory can apply to our larger fields. It is difficult to understand how the oil of such fields as those of Pennsylvania and Illinois can have migrated long distances and not left traces of travel in the intervening rocks. It is apparent that the inorganic theory of the origin of oil and gas is open to many criticisms. The theories derived from chemical reactions are ingenious, and, no doubt, may explain the origin of some petroleum; they do not, however apply to the conditions of our many oil fields as readily as the organic theories.

THE ORGANIC THEORY.

The organic theory advocates that oil and gas originate from the decomposition of vegetable or animal matter, which may have occurred in the bed which now yields oil or gas, or in adjoining beds from which they have migrated.

Chemists have shown that when the body of an animal or a plant is distilled in a closed retort or is allowed to undergo decay in the absence of air, certain gaseous or liquid products are obtained, which resemble petroleum and natural gas. Much the same results are obtained by bacteriological putrefaction of organic matter, without aid of heat. Natural decomposition of animal and vegetable matter in the sedimentary rocks through the periods of geologic time is thought to explain the origin of petroleum.

Shale is held to be the source of petroleum by some supporters of the organic theory. All shale beds are of sedimentary origin and are composed of fine particles of clay. The clay is inorganic and was deposited in water with plants and marine animal life. This decomposition was varied by the deposition of sand, and limey material. The completed stratified rocks comprise a succession of sandstone and limestone, interlain with shale beds. In some fields, as California, diatoms embedded in shale are regarded as the source of the oil. Elsewhere vegetable remains, even of delicate type, like algae, render the enclosing shale highly bituminous and oily. It is thought that all stratified beds contained water

in some degree and that the shales, because of their compactness, had less water than the sands. The presence of water in the formations may have aided in the later migration of the oil from the shales to the sands, by providing a ready medium through which the oil could rise under the influence of gravity to the highest possible position in the sand strata. The shale and sand oils are usually classified as "sweet" oils in contradistinction to the natural petroleum of the limestone beds.

The limestone theory of the origin of oil differs from the last by supposing that marine animal life, peculiar to limestone formations was the source of oil in the sedimentary rocks. The limestone oils of Ohio, Indiana, and parts of Illinois are often known as "sour" oils, because their sulphur and nitrogen content is greater than that of oils found in sand formations. They have a ranker odor than other oils and are often much lighter in color; in fact, they are sometimes designated as "green" oils.

The oil of the Mississippian formations or the Tracey and McClosky sands have undoubtedly originated from marine animals, because the producing zones are highly calcareous sands or oolitic limestones and the oil contains much sulphur. Some of the oil from the upper Pennsylvanian beds in Clark county is sour and comes from calcareous sandstones.

Of the two organic theories of the origin of oil, the shale theory is the more applicable to the pools in the Pennsylvanian or "Coal Measures" sands of the Illinois fields, since the sands seem to bear few or no fossils and are consequently barren in animal organic remains. There was, however, undoubtedly a great abundance of plant life in the waters of the basin of southern and central Illinois. The aquatic plants were algae and various types of sea weeds. In addition to these, land plants were washed down by streams and also marsh plants, such as ferns, ground-pine, etc. Plants from both sources were deposited in the muds and silts of the accumulating deposits of centuries. These, with possibly some marine life, were shut off from the oxygen of the air and other destructive agents and were trapped within the shale deposits, where eventually, through the lapse of geologic time a peculiar, slow, distillation took place, wherein the protoplasm, cellulose, and other constituents of the once living matter, were converted into oils and gases. The distillation and migration were probably a matter of ages. Natural gas is the volatilized, lighter portion of the oil which originated according to the process mentioned. The difference of gravity between gas, oil, and water caused the two former substances to seek the highest places in the rock strata. The presence of natural gas in any area is generally accompanied by oil at some point along the structure in which accumulation has taken place.

CIRCULATION AND ACCUMULATION OF OIL.

GENERAL CONSIDERATION.

A problem of special importance is the circulation of oil from its source and its mode of accumulation in porous rocks. The matter is being investigated by laboratory methods by various scientists. The cir-

culution is accomplished by capillarity, gravity, and gas or rock pressure. The accumulation of oil requires a porous reservoir with an impervious cover or roof. Certain features of geologic structure and conditions of water saturation are important factors in determining the localities at which the accumulation takes place. The circulation must also be affected by the physical properties and relations of the oil and salt water, and the rocks in which they occur. One of the potent forces in directing the circulation is doubtless capillarity, since both the shales and the sands are porous formations.

Capillary action is the physical phenomenon consequent upon the attraction or repulsion of liquids along the sides of very fine passages.

If a liquid of low specific gravity is brought into contact with a very fine hair-like tube it will seemingly pull itself along the passages; while a liquid of high specific gravity, such as mercury, will exhibit the reverse tendency. Capillary attraction is accompanied by concave liquid surfaces and capillary repulsion by convex liquid surfaces. Prof. A. W. Duff, of the Worcester Polytechnic Institute of Massachusetts, discusses the effect of capillary repulsion and attraction as follows: "When the effect (of capillary action) is a depression (mercury), the depressed surface is curved downward and the tension in the surface provides a pressure. When the effect is an elevation, the stretch on the upward curved surface tends to draw the liquid in the surface layer away from the liquid below and so produces a state of tension or diminution of pressure below the surface." If a difference of capillarity exists between water and oil in small tubes, the different elevations to which they are raised will be dependent upon the differences in their surface tensions and specific gravities, and the size of the tubes.

Shales and sandstones are porous formations containing infinite numbers of minute spaces capable of holding liquid. The spaces or pores may be likened to capillary tubes and may be assumed under proper conditions to promote capillary action. William Forstner¹ has the following to say of the classification of sand interstices: "The interstices can be divided into three classes: openings larger than those of capillary size, capillary openings, and openings smaller than those of capillary size, sub-capillary openings. Supercapillarity openings are found in bedding and joint planes, in coarse sandstones, and in conglomerates. In these openings the flow of liquids is controlled by the ordinary laws of hydrokinetics, modified by the viscosity of the fluid, and the regularity, size, and length of the openings. Capillary openings include the great majority of the interstices between the grains of sands and sandstones, many of those in conglomerates, and many of the openings caused by fracture. In these openings the velocity of flow depends upon the area and cross-section of the opening, its length, and the viscosity of the fluid. The movement is so slow that the friction of the moving fluid over the sedimentary film is very small, especially in long openings. Sub-capillary openings include part of the interstices in coarser sediments having capillary openings and nearly all the interstices between the grains of clays, shales, and slates. The movement of the fluid in these openings is excessively slow, under the hydrostatic pressures generally occurring

¹ Forstner, William, The Occurrence of Oil and Gas in the South Midway Field, Kern County, California. *Economic Geol.*, Vol. VI, 1911, p. 140.

in these strata the movement will be reduced to such an extent, that the fluid may be considered as [existing in] fixed films held by molecular attraction."

Capillarity was perhaps effective upon the included water of shales long before the distillation of oil began in them, and may have caused the expulsion of water into the sands. The action extended to the oil which began to originate and find its way into the pores of the shale. Its production was exceedingly minute, yet it was acted upon by capillarity, and caused to ascend toward the sand. The relation of specific gravity of oil and water caused the oil to rise to the top of the water in the sandstones. It is assumed that this action continued as long as distillation took place, until eventually the oil had left the shales to a large degree and had accumulated in the sandstones. The action may have been further aided by various compressions of the formations and other unknown physical phenomena until the shales had given up most of their oil to adjoining porous sandstones.

It is probable that the gaseous hydrocarbons and petroleums of various specific gravities were not separated until the more porous beds were reached. Under the stress of earth movements and different degrees of heat and pressure, changes in the composition of the petroleums must have occurred. Again the oil may have been affected chemically by water in the sandstones and altered from its original condition.

It is apparent that the distribution of petroleum is greatly influenced by the presence of water and it is a fact that there is abundant water in the Illinois oil sands. Oil is lighter than water. If both are present the oil rests upon the surface of the water and is to that extent controlled by the latter. If oil and water are not associated, the petroleum moves downward along bedding planes and through coarse, porous strata under force of gravity. In such a case it may occur in pores at the bottom of a syncline.

A third theoretical agent of the circulation of oil from its source of distillation to its present position is perhaps that of gas pressure or "rock pressure." This pressure is always noticeable when a new oil or gas area is opened up. The oil generally rises far up into the casing of the new well and often above its mouth. If gas is present and the casing is closed so that the product cannot escape into the air, a pressure is developed inside the pipe. The gas may accumulate instantly and thus indicate a very porous reservoir beneath, or it may take considerable time to gather and thus show a less porous one. The two conditions have often occurred in the same locality and yet the same pressures were eventually secured. It is thought that gas pressure may help to promote movement of oil through the containing rocks.

New lines of investigation have been carried on recently by Dr. D. T. Day, J. Elliot Gilpin, and Oscar E. Bramsky of the United States Geological Survey in an effort to find the cause of the differences between such oils as those of Pennsylvania and Illinois and those of Ohio and Indiana, or rather the Trenton limestone oils.¹ The question reverts to the cause of the difference between "sweet" and "sour" oils, assuming that all petroleum, no matter what its source is, is a definite substance;

¹ Gilpin, J. Elliott, and Bramsky, Oscar E., *The Diffusion of Crude Petroleum through Fuller's Earth*, Bull. U. S. Geol. Survey No. 475, 1911.

the product of one field differing from another only in the proportion of its series and members of hydrocarbons. The Pennsylvanian and Illinois "sweet" oils are found to contain a larger proportion of paraffin hydrocarbons and less benzine, unsaturated hydrocarbons, sulphur and nitrogen than the Ohio and some California oils. It is concluded that the first mentioned oils were migratory, because the sands in which they are found bear little evidence of containing a source for the petroleum, while the oils of Ohio and perhaps the McClosky oil of the Illinois fields are thought to have originated in the limestone beds in which they are found. If such is the case and petroleum is everywhere the same substance except for the lack of certain hydrocarbons, the difference in the two grades of oil must be the result of migration through filtrating materials, or, in other words, of a "selective activity" of shale or clay. It may be true that some of the Pennsylvania and Illinois oils now reposing in sands were originally of animal origin and they have lost some of their original ingredients by migration. These conclusions led to experiments upon the diffusion of petroleum through Fuller's earth, which is a good type of shale for purposes of investigation. It was found by Day that oil such as the Illinois oil could be produced by this method from crude Trenton limestone oil. Glass tubes packed with dry Fuller's earth were placed in vessels containing crude Illinois oil. The oil, in the course of some time, began to move upward in the tubes by force of capillarity. Examination of the tubes at the conclusion of the migration showed that light oils were found at the top, and low grade, heavy oils, sulphur, and other heavy constituents at the bottom of the tube. Continued filtrations of the oil removed the sulphur compounds entirely.

It was concluded from these experiments, "that the Illinois oil at some time in its history diffused through porous media, which exercised a selective action upon it, removing a large part of the unsaturated and sulphur compounds and probably the benzine and nitrogen compounds."

THE POROUS STRATUM.

Petroleum was valueless as a commercial product when it was originally formed, because its diffusion was so complete that a bore into the containing rock could scarcely have obtained a showing of oil. Its accumulation in pools of commercial value first demands more porous beds than the shales in which it is supposed to have originated. The strata of sand interlain with the shales are suitable reservoirs because in most cases they are much more porous than the compact shales. Exceptionally, the sands themselves contain portions which are extremely compact and impervious. These non-porous areas may act as retaining covers and effect the concentration of underlying oil where structure is favorable. They may be extensive enough to separate adjoining pools, or they may be small enough in extent to cause mere local "dry spots" in the midst of very productive territory, in which the sands are otherwise highly porous. The presence of small streaks of shale within the sandstones is frequent in Illinois formations. Often two or three averaging 5 to 15 feet in thickness may occur in a thickness of 50 to 80 feet of sand. The driller terms these "breaks." The sand and the

"break" merge into one another in most cases and oil is not often found where sand and shale are thus mixed.

IMPERVIOUS COVER.

An important requirement for the accumulation of oil and gas is an impervious cover, or retaining roof, which will hold the oil and gas captive in the porous stratum. In Illinois there is almost invariably a cover of hard, compact, shale over the oil sands. This is particularly true of the sands in the Pennsylvanian formations. The producing sands in the Mississippian formations are overlain in some instances by limestone. The impervious covers have doubtless caused the retention of the oil in the sands during the periods of earth movements which caused structural folds in the rock. If an oil pool did not have an impervious cover between it and the surface, the lighter portions of the oil would long-since have volatilized and passed off as natural gas, while only the heavy oil or asphalt-like residue would remain. Where a thin cover lies over a productive oil sand some of the lighter portions of the petroleum have escaped and heavy, lubricating oil is generally found. This is of low gravity and consequently of low grade, and generally serves as fuel oil. The abundance of shales within the "Coal Measures" and the upper Mississippian rocks of Illinois have prevented an extensive volatilization and consequently the oils are of good grade, averaging about 33° in gravity.

GEOLOGICAL STRUCTURES.

Another very important necessity for the accumulation of oil and gas in pools is the presence of certain types of structural features in the rocks. The sedimentary strata were deposited under water horizontally, or practically so, and the natural distillation of oil probably took place primarily while the beds were in that position. Subsequent disturbances took place causing the strata to be folded, forming as it were, arches, or domes, in some places, and corresponding troughs or basins in others. The arches are known as anticlines while the troughs are called synclines. When these undulations took place, the water, petroleum, and gas within the sand formations were forced to move and distribute themselves according to the laws of gravitation and hence according to their specific gravities. The water was the heaviest of the three fluids, and, therefore, sought the synclines as far as possible, depending, of course, upon the porosity of the sands. Its tendency was to displace the oil and gas, forcing the oil to float on the water and the gas to rise still higher. The oil was enabled to rise as far as the water extended up the slopes of the syncline, while the gas was able to free itself from the fluids and rise to the highest place in the porous bed, usually the crests of the anticlines.

The earth disturbances effecting the changes in the positions of the strata may be responsible also for minor irregularities which occur on the anticlines and synclines themselves. The surface of an oil sand on the anticline may be pitted or undulating. This condition may affect an extensive area or only a few acres of ground. The general accumulation of oil and gas is governed by the anticline proper, covering many miles, and the segregation of pools may possibly be caused by smaller folds on

the large one. Coupled with this intricate system of synclines and arches on the parent fold, there is variation in the porosity of the sands; the two conditions greatly affect the distribution of oil and gas. It is readily recognized that either factor may, locally, explain the presence of dry holes within productive territory. Some question has arisen as to whether these minor arches are true anticlinals of deformational character or whether they represent merely original thickening and thinning of particular beds or, again, whether they result from unequal settling during the consolidation of the sediments. Locally, any or all of these factors may account for the conditions.

Another important type of geologic structure in which an accumulation often occurs, is the "terrace" or flattened area upon the flanks of a syncline or anticline. The terrace, strictly speaking, is an interruption in the uniform dip of the sides of a basin, where the rocks are approximately horizontal. Such terraces are to be found upon the sides of the great structural basin in southern and central Illinois. A segregation of oil takes place upon a favorable terrace much in the same manner as in the anticlines and the synclines. The water of the basin enables the oil to rise to the terrace, where it may be trapped by friction. But the oil, originally in the sloping sand above the terrace, may migrate farther up the general incline so as to float on the water surface. The gas follows its usual course in freeing itself from the oil and accumulates in the terrace head or continues up the general dip to the adjacent anticline or to some impervious barrier.

Frederick G. Clapp has classified oil pools according to their geological structure, because all known fields have shown their accumulations to be due primarily to definite structures. His classification is as follows:¹

1. When anticlinal and synclinal structure exists.
 - Strong anticlines standing alone.
 - Well defined alternating anticlines and synclines.
 - Monoclines with change in rate of dip.
 - Structural terraces.
 - Broad geanticlinal folds.
2. Quaquaiversal structures.
 - Anticlinal-bulge type.
 - Saline dome type.
 - Volcanic neck type.
3. Along sealed faults.
4. Oil and gas sealed in by asphaltic deposits.
5. Contact of sedimentary and crystalline rocks.
6. In joint cracks of sedimentary rocks.
7. In crystalline rocks.

Investigations of the main fields in Lawrence county, Illinois, reveals an additional member to Clapp's arrangement. This is a double plunging anticline or a combination of a strong anticline standing alone and a dome or quaquaiversal structure. This may fall under Class I or it may necessitate subdivision of Class 2 as follows:

2. Quaquaiversal structures.
 - (a) Anticlinal-bulge type.
 - (b) Saline dome type.
 - (c) Double-plunging anticline type.
 - (d) Volcanic neck type.

¹ Clapp, Frederick G., *The Occurrence of Oil and Gas Deposits Associated with Quaquaiversal Structure*. *Economic Geology*, Vol. VII, No. 4, 1911, p. 364-381.

WATER SATURATION.

One of the most important factors, if not the greatest, in the concentration of oil in raised structures, is the presence or absence of water in the oil-bearing stratum. Mr. W. T. Griswold offers some very interesting observations upon this subject with reference to the Appalachian region.¹ The theories are more or less applicable to the Illinois rocks, inasmuch as they are of similar age and character. His conclusions are as follows:

"In *dry* rocks the principal points of accumulation of oil will be at or near the bottom of the syncline or at the lowest point of the porous medium, or at any point where the slope of the rock is not sufficient to overcome the friction, such as structural terraces or benches. In porous rocks, *completely saturated*, the accumulation of both oil and gas will be in the anticlines or along level portions of the structure. Where the area of porous rocks is limited, the accumulation will occur at the highest point of the porous stratum; and where areas of impervious rocks exist in a generally porous stratum the accumulation will take place below such impervious stop, which is really the top limit of the porous rock. In porous rocks that are only *partly filled* with water the oil accumulates at the upper limit of the saturated area. This limit of saturation traces a level line around the sides of each structural basin, but the height of this line may vary greatly in adjacent basins and in different sands of the same basin.

"Partial saturation is the condition most generally found, in which case accumulations of oil may occur anywhere with reference to the geologic structure. It is most likely, however, to occur upon terraces or levels, as these places are favorable to accumulation in both dry and saturated rocks.

"Under all conditions the most probable locations for the accumulation of gas are on the crests of anticlines. Small folds along the side of a syncline may hold a supply of gas, or the rocks may be so dense that gas may not travel to the anticline, but will remain in volume close to the oil."

The above observations were found applicable in the Illinois oil fields, as described under the relations of structure to salt water, oil and gas. The Illinois wild-cat areas have not offered sufficient data as to water saturation to warrant conclusions with reference to it. It is hoped that in the future the operators in Illinois will note with as much exactness as possible the wet condition of the sands they encounter. It will then be possible for the geologist or engineer to offer better suggestions as to the probable conditions in prospective oil areas.

GENERAL GEOLOGY OF ILLINOIS RELATING TO OIL AND GAS.

INTRODUCTION.

In order that the reader may have a general view of the oil and gas conditions of the State, a brief elementary review of its geology is presented.

¹ Griswold, W. T. and Munn, M. J., *Geology of Oil and Gas Fields in Steubenville, Burgettstown and Clayville Quadrangles, Ohio, West Virginia and Pennsylvania.* Bull. U. S. Geol. Survey No. 318, 1907, p. 15.

Those who have observed the ledges exposed at quarries or in the banks of streams appreciate that the rocks occur in rather definite layers of varying thickness. Well drillers, especially, realize that sandstone, shale, limestone and combinations of these rocks underlie the State as alternating strata of considerable regularity. The study of these relations constitutes stratigraphic geology or *stratigraphy*.

A rock stratum may underlie a large or a small area. Thus, a coal bed or an oil sandstone, or "*sand*," may be present in one locality but absent in the adjoining region. The *areal* extent of oil sands therefore is a matter of importance to operators.

The rock layers exposed to view appear to be flat-lying or horizontal. Detailed study may show gentle pitching or *dipping* of the strata. Thus, a sandstone may lie 300 feet below sea level in a particular area, but dip so as to be 500 feet below sea level in an adjoining county. Exceptionally, the rocks lie in gentle folds. The attitude or "lie" of the strata constitutes, broadly, their "*structure*," and the determination of this is of utmost importance in the discovery and development of an oil field.

The geology of the State is described elsewhere¹ in a more detailed manner; it will be sufficient in this report to discuss its significant features, briefly, under the headings just mentioned.

STRATIGRAPHY.

The accompanying sections indicating the order and character of the strata were first published by Bain² in 1907. They are modified by the writer to agree with later data and conclusions.

Overlying the consolidated rocks of the State except in the extreme southern and the northwestern counties, there is a varying thickness of glacial deposits or "*drift*." These clays, sands, gravels, etc., are commonly encountered in drilling before hard rock is reached. Locally, they contain gas and Bain says:

"Natural gas is found in these deposits in small quantity at a number of points throughout the State. Such wells are, or have been, known near Champaign, Princeton, Colchester, Wapella, Heyworth, and elsewhere. The pressure is usually slight and the life of the individual wells is usually short. While it is not possible in every case to absolutely exclude the possibility of these wells representing leakage from lower reservoirs, a sufficient explanation of them is believed to be found in the decay of woody material buried in the drift itself. These wells are characteristically difficult to maintain owing to sand clogging the pipes."

The section for southern Illinois is most important in the present study. The formations yielding oil and gas production are indicated by italic and occur chiefly in the Carboniferous system. Possible oil "sands" are suggested also in the Ordovician and Silurian systems, especially in central and northern Illinois.

¹ Weller, Stuart, The Geological Map of Illinois: Bull. Ill. State Geol. Survey No. 6, 1907.

² Bain, H. Foster, Petroleum Fields in Illinois in 1907: Bull. Ill. State Geol. Survey No. 8, pp. 273-312.

Northern Illinois section.

This section is intended to be representative for that portion of the State lying north of Rock Island, LaSalle, and Kankakee.

Pennsylvanian.	{	McLeansboro. Limestones and nodular calcareous shales in upper part and sandstone at the base. Thickness 300 feet.
		Carbondale. Coal, shale, sandstone and limestone. Thickness 200 feet.
		Pottsville. Shale. Thickness 2 to 20 feet.
		Unconformity.
Devonian.....	{	Limestone. Thickness 125 feet.
		Unconformity.
Silurian.....	{	Niagara. Dolomite. Thickness 20 to 400 feet. <i>Contains frequent seepages of bitumen in the vicinity of Chicago.</i>
		Unconformity.
Ordovician.....	{	Cincinnatian (Maquoketa). Shales and limestone. Thickness 50 to 225 feet.
		Unconformity.
		Galena-Trenton. Mainly dolomite; a little limestone and shale at the base. Thickness 230 to 450 feet. <i>A very persistent "oil" rock or petroliferous shale in the lower portion.</i>
		St. Peter. Sandstone, friable. Thickness 100 to 220 feet. Heavily water-bearing.
		Lower Magnesian. Dolomitic limestone. Penetrated to 845 feet. All but upper part known from well records; rests on Potsdam sandstone, known only from well records.

Central Illinois section.

For the region south of Rock Island, LaSalle, and Kankakee, and north of the Missouri river and Marshall, Clark county.

Pennsylvanian.	{	McLeansboro. Shales, sandstones, thin limestones and coals. Rocks between top of Herrin (No. 6) coal and bed rock. Thickness 125 to 700 feet.
		Carbondale. Coals, shales and sandstones. Rocks between the base of the Murphysboro (No. 2) coal and the top of the Herrin Coal. Thickness 100 to 300 feet.
		Pottsville. Sandstones, thin shales and coals. Thickness 150 to 200 feet. <i>Carlinsville oil-sand, Macoupin county; small amounts of oil and gas reported but position not certain.</i>
		Unconformity.
Mississippian...	{	Birdsville and Tribune (Chester). Irregular thickness of sandstone, shale and limestone, recognized in a few borings; generally absent in this territory. Thickness 0 to 50 feet.
		Ste. Genevieve, St. Louis, and Salem. Limestone, non-magnesian, partly cherty and partly oolitic. Thickness 225 to 400 feet.
		Osage (Burlington, Keokuk and Warsaw). Shales and limestone, the latter often cherty. Thickness 100 to 400 feet. <i>Crude petroleum in geodes near top of the Keokuk.</i>
		Kinderhook. Shales, limestones, and sandstones. Thickness 40 to 120 feet.
		Unconformity.
Devonian.....	{	Upper Devonian. Shale. Thickness 0 to 130 feet.
		Hamilton. Limestones. Thickness 0 to 100 feet.
Silurian.....	{	Unconformity.
		Niagara. Dolomite. Thickness 50 to 150 feet. <i>Gas at Pittsfield, Pike county and oil seepage in Calhoun county.</i>
Ordovician..	{	Cincinnatian (Maquoketa). Shales. Thickness 40 to 200 feet.
		Unconformity.
		Galena-Trenton. Dolomite. Thickness 200 to 400 feet. <i>Oil seepage in Calhoun county.</i>
		St. Peter. Sandstone. Thickness 120 to 170 feet. Lower Magnesian. Dolomitic limestone. Penetrated to 700 feet.

Southern Illinois section.

For the area lying south of a line drawn eastward from the mouth of the Missouri river to Marshall, Illinois, and the State line.

Quaternary....	{	Glacial till, sand, and gravel; loess and alluvium. Present as surface rocks everywhere except in northwest and extreme south. Thickness, 30 to 225+ feet.
Tertiary.....	{	Lafayette, LaGrange and Porters Creek. Clays, sands, gravel, and ferruginous conglomerate. Occurs only in extreme south. Thickness 250 feet.
Cretaceous.....	{	Ripley. Clay and sand. Occurs only in extreme south. Thickness 20 to 40 feet.

Southern Illinois Section—Concluded.

- Pennsylvanian. { McLeansboro formation. Shales, sandstones, thin limestones and coals. Rocks between top of Herrin (No. 6) coal, and bed rock. Thickness 500 to 1,000 feet. *Contains the oil and gas sands of the Westfield, Siggins and Cuscy pools.*
 Carbondale formation. Coals, shales and sandstones. Rocks between the base of Murphysboro (No. 2) coal and the top of the Herrin coal. Thickness about 375 feet. *Lower "pay," Johnson township pool, Clark county.*
 Pottsville formation. Sandstone, some thin shales and coals. Thickness 300 to 700 feet. *Includes the Buchanan sand (base), and Bridgeport sand (top), Lawrence county; Robinson sand (top), Crawford county; oil sand of Litchfield, Montgomery county; probably the Princeton, Ind., oil sand.*
 Unconformity.
- Mississippian .. { Birdsville and Tribune (Chester). Sandstones, shale, and limestones; usually six limestones with three well defined beds (non-cherty) and generally with red shale at the base. Thickness 770 feet. *"Gas" and Kirkwood sands, Lawrence county; gas sand, Vincennes, Ind.; Sparta sand, Randolph county; Stein and Benoist sands, Marion county (the latter is the equivalent of the Kirkwood sand); Lindley gas sand, Bond county; Carlyle sand, Clinton county and the Oakland City sand, Pike county, Ind. Tracey sand, Lawrence county and probably Denny sand, Perry county (show of oil.*
 Cypress. Sandstone, massive, coarse-grained; fairly regular in a thickness of 80 to 150 feet in southwestern Illinois; very irregular and usually thin in southeastern Illinois. The Cypress sandstone is absent in the oil fields of Lawrence county.
 Unconformity.
 Ste. Genevieve. Limestone, mostly oolitic and very cross-bedded. Thickness, 80 to 100 feet. *McClosky sand, Lawrence county.*
 St. Louis and Salem (Spergen). Limestone, dense becoming oolitic in lower division. Thickness 320 feet. *Show of oil reported at base in the Lawrence county pool near Bridgeport.*
 Osage (Burlington, Keokuk and Warsaw). Shale above and coarse-grained limestone with chert below. Thickness 440 feet.
 Kinderhook. Shale and shaly limestone, red. Thickness 60 feet.
- Devonian..... { Upper Devonian (Sweetland Creek). Shale. Thickness 50 to 60 feet.
 Hamilton. Limestone. Thickness about 100 feet.
 Onondaga (Grand Tower). Limestone. Thickness 155 feet.
 Oriskany (Clear Creek). Chert and limestone. Thickness 200 to 240 feet.
 Helderberg (New Scotland). Limestone. Thickness 165 feet.
- Silurian..... { Alexandrian (Sexton Creek, Edgewood and Girardeau). Limestone, some shale. Thickness 116 feet.
- Ordovician { Richmond (Cincinnati). Orchard Creek, shale, Thebes sandstone, Fernvale limestone. Thickness about 100 feet.
 Galena-Kimmswick. Non-dolomitic limestone. Thickness 510 feet recorded.
 St. Peter. Sandstone. 120 feet recorded.
 Lower Magnesian. Mostly dolomitic limestone with occasional thin layers of sand and shale. 545 feet recorded.

AREAL EXTENT OF THE FORMATIONS AND OIL SANDS.

The extent of the main geologic systems in Illinois is suggested by the map already published.¹ Of particular interest here is the extent of the formations which are, or may be, productive of oil and gas. Passing from the youngest to the oldest or lowest rocks, by far the most important are the Pennsylvanian and Mississippian formations; although the Silurian and Ordovician rocks deserve brief mention. The Carboniferous include the Pennsylvanian ("Coal Measures") series and the underlying Mississippian.

The Pennsylvanian rocks occupy 42,000 square miles in the heart of Illinois. They are absent from that part of the State lying north of an irregular line drawn eastward from Rock Island. The boundary swings southward from near the mouth of Kankakee river to a point west of Paxton, thence northeast to the State line near Watsika. South of this line the Pennsylvanian rocks continue from Illinois into Indiana and Kentucky. The southern and western margins of the area follow the trend of the Ohio and the Mississippi at a distance of 10 to 25 miles. The Pennsylvanian rocks of the southern area are thickest and most

¹ Loc. cit.

complete. They are thinner in the central section, chiefly because of the thinning away of the Pottsville formations with their included oil sands. North and northwest of Springfield these rocks are essentially absent but they are present eastward from Decatur. A thin layer occurs also in the vicinity of Rock Island. The lowest beds of the Pennsylvanian are lacking along the western boundary of the State from Randolph county northward to Rock Island. It thus appears that the oil sands of the Pottsville are most promising in the central and southeastern parts of the State. Even there, the Pottsville may be limited to areas from which the upper Chester formations have been eroded. The higher sands may be found present practically anywhere except at the thin edge of the Pennsylvanian area. The horizontal extent of the various sands is not known accurately, even within the drilled areas, because of lack of good well records and consequent difficulty of identifying the sands.

The Pennsylvanian rocks above the Pottsville are subdivided into upper and middle parts, the Pottsville constituting the basal portion. The upper part is specifically known as the McLeansboro and the middle part, the Carbondale.

The McLeansboro formation includes all the rocks between the top of the Herrin or No. 6 coal and the top of the Pennsylvanian series. A thin layer of shale usually overlies the Herrin coal followed by a very persistent limestone. The limestone contains a small fossil known as the *Fusulina*, which is about the size of a large grain of wheat. It tapers at both ends and a cross-section has the appearance of concentric circles. Dr. Udden has been able to distinguish fragments of the fossil in a quantity of chopped, or ground, well samples taken from a churn drill hole. A red shale is often found from 40 to 200 feet above the Herrin coal. This red bed has been noted in Peoria county by Dr. Udden; in Fulton, Sangamon, and Clark counties by T. E. Savage; in LaSalle county by Gilbert Cady, and in White, Gallatin, and Saline counties by F. W. DeWolf. It occurs high up in many well records in Crawford and Lawrence counties but low in other sections of the State. The *Fusulina* limestone, red shale, and top of the No. 6 coal are the most important beds in the McLeansboro and the absence of any two of them still leaves a possible means of determination for the base of this division. There are usually 300 feet of shale, clay, some sand, local coal beds, etc., between the *Fusulina* limestone and the Shoal Creek limestone. The maximum thickness of the formation in southeastern Illinois is about 1,000 feet.

The Carbondale includes the rocks from the Murphysboro (No. 2) coal to the top of the Herrin (No. 6) coal. Shale constitutes the major part of the division with much micaceous sandstone in the basal portion. There are several beds of limestone underlying the Herrin coal. The shales are soft and cavy and often very sandy, so closely are they associated with the massive Pottsville sandstones beneath. The sandstones are sometimes coarse above the Murphysboro coal. This coal is often absent and a thin limestone and more often shale, separates the Carbondale and Pottsville. There is a good bed of sand usually under the Herrin coal. The productive oil-sand north of Centralia is thought to correspond to this and therefore lies in the Carbondale. The most important beds of this division are the Herrin coal at the top, the Murphys-

boro coal at the base and the Harrisburg (No. 5) coal between. These coals are widely distributed and give good opportunity of interpreting this division. The formation is about 225 feet thick in the northern part of the coal area of Illinois, and 300 to 450 feet in southern counties.

The Casey sands, or the shallow sands of Clark, Coles, Cumberland, and Edgar counties and the 400-foot sands of the Robinson pool in Crawford county, occur well up in the Pennsylvanian. They are interbedded with coals, thin limestones, and prevailing shales. They have been widely drilled along the LaSalle anticline and have been found productive of oil and some gas. Their shallowness and the ease of drilling through the overlying formations has caused their thorough exploitation. These sands are fairly widespread over the southern and central portions of Illinois but have been found commercially productive in but one other locality beyond the LaSalle fold. The original oil seep in the mine north of Centralia, which gave impetus to the development of the Marion county oil field, is from a sand immediately underlying the Herrin coal. This sand was found productive in several wells north of Centralia. As soon as the position of the Herrin coal is definitely learned in the main oil territory, it will perhaps be possible to identify and correlate this sand.

The Pottsville sands at the base of the Pennsylvanian have been studied in Illinois along their outcrop by David White. From the fossils they are believed to correspond in age to the Pottsville rocks of the Appalachian region. The oil and gas sand of Litchfield apparently belongs in the Pottsville. This is perhaps the only instance in which these formations are productive of oil outside the Buchanan sand of the southeastern Illinois fields. The Pottsville sandstones of the central and southern portions of the State, especially in the deeper part of the Illinois basin and over the LaSalle anticline, are conspicuous for their massiveness. Since they are interbedded with shales, however, the top of the formation is difficult to identify, owing to the merging of the sands with overlying shaley rocks. The correlations in this report were based, for the most part, upon the top of the thick sand immediately underlying the conspicuously shaley rocks. These sands are fairly well saturated with salt water wherever they have been encountered. They commonly lack conspicuous limestone strata, thus differing distinctly from the underlying Mississippian rocks. In the southern part of the State the Pottsville rocks are as much as 700 feet thick.

The Mississippian series lying in the Carboniferous, next below the Pennsylvanian ("Coal Measures") contains important oil sands whose exact extent is not accurately known. The outcrops of the Mississippian rocks occur around the southern and western borders of the State, and exposures show that the full thickness is not everywhere present. The thickest development occurs in the southern area. It wedges out to the north so its edge is overlapped and concealed by the Pennsylvanian rocks. The Mississippian oil sands, as shown by the table, occur in the upper or Chester members. They are the most productive sands and have produced most of the oil from the eastern Illinois fields.

The top of the Chester is not positively recognized in drill records. The correlations in this report were based upon the limestone immediately underlying the massive Pottsville sandstone. It is succeeded by

other limestones interlain with strata of sandstones and red shales. Weller says:¹

From most of the literature on the subject one gains the impression that the Chester is dominantly a limestone formation, but in working over the area occupied by the beds in the field, one is impressed with the fact that it is in a large part sandstone. Nowhere in that part of Illinois occupied by these beds, is the limestone element in the formation the most conspicuous feature, except along the Mississippi river bluffs above Chester, from that city to the point where the Cypress sandstone outcrop begins. It is probable that where the limestone has its greatest development, not more than one-third of the total thickness is calcareous, and over a large part of the area the thickness of the limestones probably does not exceed one-fifth of the entire thickness.

The best region in which to study the succession of beds in the Chester, is in the Mississippi river bluffs above and below the city of Chester. This section shows an alternation of chiefly calcareous and arenaceous formations, there being three conspicuous limestones and three sandstones. The limestones are frequently interbedded with calcareous shales, and the sandstones frequently become arenaceous shales or at times clay shales.

The lowest member of the "group," above the Cypress sandstone, is a limestone and shale formation attaining a maximum thickness of approximately 250 feet at and above Chester. In its lower portion it includes considerable beds of calcareous and clay shales, a bed of variegated red and blue shale being commonly present near the base. In the upper part of this member is a great limestone ledge about 100 feet in thickness, with occasional thin shaly partings, which furnishes the quarry rock at the Southern Illinois penitentiary, at Menard. The great mass of the fauna of the "Chester group" in Illinois has been described from this lower, calcareous member of the formation as a whole.

The second member of the "group" is a sandstone or shale, the shale being most conspicuous in the more northern part of the area, while to the south it is almost wholly a sandstone similar to the Cypress in character, but usually thinner bedded and not infrequently more or less of an arenaceous shale. This division attains a thickness of about 80 feet. The third is again a limestone which is apparently more impure than most of the beds of the lower division. It is much less fossiliferous than the lower division and the fossils are such as to give it definite faunal characters which can be recognized over wide areas. Its thickness near Chester is about 60 feet. The fourth member is again a sandstone similar to the earlier sandstone beds, and attains a thickness of 65 feet. The fifth member is a limestone similar to limestone No. 2, in lithologic characters, and is usually almost or quite unfossiliferous. Its thickness is about 35 feet.

It seems to be altogether probable that these three limestone beds of the Chester "group" can be differentiated and mapped throughout the faulted area in the southern part of the State, and that by means of them the structure can be worked out in much detail. In the final work upon these beds it will probably be found to be expedient to distinguish each of these six members of the Chester by distinct formation names, just as the Cypress sandstone is now distinguished.

Dr. Weller has kindly furnished the following general section of the Chester rocks from the exposures along the Mississippi bluffs in Randolph and Monroe counties, Illinois:

¹ Weller, Stuart, The Geological Map of Illinois. Bull. Ill. State Geol. Survey No. 6, 1907.

General section of the Chester (above the Cypress sandstone).

Formations.		Thickness in feet.
Birdsville:		
Rockwood sandstone	.....	100
Limestone (No. 3)	.....	20
Arenaceous shale or shaly sandstone	.....	47
Sandstone	.....	10
Arenaceous shale or shaly sandstone	.....	33
Limestone (No. 2)	.....	54
Shale	.....	42
Limestone (persistent bed)	.....	8
Shale (in some places a bed of sandstone occurs in this shale of variable thickness from 0-20 feet)	.....	36
Limestone	.....	4
Shale	.....	4
Tribune:		
Limestone (No. 1), heavy bedded	.....	80
Interval of uncertain character, lower part probably shale and upper part limestone	.....	30
Limestone (fossils)	.....	49
Probably shale—not exposed	.....	38
Variegated red and green shales	.....	15
Not exposed	.....	5
Limestone (fossils)	.....	20
Shale, thin streak	.....	15
Limestone	.....	15
Shale, thin strata	.....	25
Unknown	.....	25
Cypress sandstone	.....	134
Total depth to bottom of Cypress		769

The thinning away of the Chester beds to the north causes the absence of important oil and gas sands in that part of the State. No Chester has been found present west of a line from Decatur to O'Fallon. Probably there is little Chester north of a line between Decatur and Springfield.

Pre-Chester sands of the Carboniferous or those below the rocks just described are not present in the main fields. These rocks have been very little prospected elsewhere and are not known to be productive in other sections of the State. Regardless of its close association with the Chester proper, its wide extent and porous character, the Cypress sandstone is not looked upon as holding much promise.

The Chester group is limited to the Tribune formation because of upper and lower erosion periods in which the Birdsville or upper division and the Cypress or lower sandstone member have entirely disappeared.

The Ste. Genevieve limestone underlies the Cypress and is found to be highly productive of oil in Lawrence county. This bed is mostly limestone but conspicuously oolitic and soft, which appears to be a recurrence of the same phase of the lower Salem limestone. Its maximum thickness in the oil fields is 85 feet while Weller gives 100 feet for Monroe county. The McClosky sand corresponds to the Ste. Genevieve. Below that, in the Carboniferous, are no known beds that are either encouraging or discouraging as possible sources of oil. A very recent report, however, describes the finding of oil 300 feet below the top of the St. Louis limestone on the Hardacre farm, N. E. $\frac{1}{4}$ Sec. 10, T. 3 N., R. 12 W., Lawrence township, Lawrence county. This may indicate an oil horizon at this position in the series. Petroleum has also been found in the geode bed of the Keokuk. This is not believed, however, to be especially significant.

The Silurian includes the Niagara limestone formation, which in northern Illinois is dolomitic, and locally contains bituminous deposits. It offers some slight chance of oil production.

The Ordovician system includes the Galena-Kimmswick limestone, along with others of little importance in this connection. Over it lie the Richmond-Maquoketa shales which, in the northwest counties, are rich in disseminated oil. The Galena-Kimmswick is known to be 300-400 feet thick in the north; 250 feet thick in Calhoun and Jersey counties; at least 100 feet in southern Illinois. It doubtless underlies the younger rocks of the Illinois basin.

STRUCTURE.

Throughout the central portion of Illinois there is a spoon-shaped basin with its long axis extending from the north line of Stephenson county past LaSalle, Lovington, and continuing to the southwest county of Indiana. The deepest part of the basin lies in the vicinity of Wayne, Hamilton, Edwards, and White counties, where the rocks are comparatively flat. Towards this basin, with local exceptions, all the rocks of Illinois and of western Indiana dip gently. The sides of the "spoon" show some minor longitudinal folds. The most important is the LaSalle anticline (See Plate IB) which runs from Freeport to a point just east of LaSalle, and continues in a southeasterly direction through the oil field and into Indiana. From western Illinois the rocks dip gently eastward until the Duquoin anticline is reached but then dip much more rapidly to the axis. They rise from this line to the LaSalle anticline, decline gently, and then rise again into Indiana. The dips of the southern rocks into the basin are locally 100 feet or more to the mile. The anticlines and other minor irregularities influence the accumulation of oil and gas as explained in a previous discussion, and, therefore, are of special importance. They become less conspicuous towards northern Illinois; consequently that part of the State does not offer as promising structural features, for the accumulation of oil as the southern part and it moreover, entirely lacks the Pennsylvanian and Mississippian oil sands. Oil if present must be found in the older formations.

STRATIGRAPHY OF CRAWFORD AND LAWRENCE COUNTIES.

GENERAL STATEMENT.

The stratigraphy of Crawford and Lawrence counties is revealed by the study of two sets of columnar sections comprising the most representative borings in the two counties. Three of the records, 2, 5, and 10 of the Lawrence county and all of the logs of the Crawford county sections are precise studies of well samples collected by the writer and examined by Dr. J. A. Udden.

CRAWFORD COUNTY.

All the penetrated rocks in the producing areas of Crawford county belong to the Pennsylvanian series. These rocks are overlain by a varying thickness of drift. The Pennsylvanian series are represented by about 480 feet of the McLeansboro, 300 feet of the Carbondale, and about 100 feet of the Pottsville formations. The rocks are all of sedi-

mentary origin being principally shales with variable intergradations of sandstones, limestones and coal. The columnar section of Crawford county is made up of logs from several localities, several of which are outside the area covered by this report. They are plotted in order from

in
a
ll
e-
re
x-

[illegible]

Gray shale of fine texture, fossil fragments, bits.....	410	415
Shale, sandy, micaceous greenish gray, with leaf imprints.....	415	420
Shale, sandy, micaceous and greenish gray with small black fragments of vegetation	420	425

The Ordovician system includes the Galena-Kimmswick limestone, along with others of little importance in this connection. Over it lie the Richmond-Maquoketa shales which, in the northwest counties, are rich in disseminated oil. The Galena-Kimmswick is known to be 300-400 feet thick in the north, 250 feet thick in the south. In Lawrence county the y

Th
basin
count
of In
Ham
tively
Illinc
show
antic
of La
field
ward
idly t
gentl
into t
and o
as exj
portat
quent
featur
over,
if pre

The
the st
sentat
of the
tions
exami

All
belong to the Pennsylvanian series. These rocks are overlain by a varying thickness of drift. The Pennsylvanian series are represented by about 480 feet of the McLeansboro, 300 feet of the Carbondale, and about 100 feet of the Pottsville formations. The rocks are all of sedi-

mentary origin being principally shales with variable intergradations of sandstones, limestones and coal. The columnar section of Crawford county is made up of logs from several localities, several of which are outside the area covered by this report. They are plotted in order from south to north in Plate II. The top of the limestone over the Herrin coal, which may be called the "*Fusulina*" limestone for the lack of a geographical name, is used as a key line for the columnar section. All the records are plotted with respect to this line and are presented herewith, corresponding by number to those printed on Plate II. All of the following logs were compiled by Dr. J. A. Udden from a detailed examination of well samples saved by the Ohio Oil Company.

LOGS.

No. 1.—*M. Shiltz*, No. 7.

Location—SE. $\frac{1}{4}$ sec. 7, T. 7 N., R. 14 W., Oblong Township.
Elevation—485 feet.

	Depth in feet.	
	From	To
Unknown	0	185
Light gray micaceous sandstone or sandy shale. The laminae are from one-twentieth to one-eighth of an inch in thickness...	185	190
Gray micaceous shaly sandstone, with carbonaceous foliations showing leaf fragments and needle-like impressions. Biotite scales noted	190	200
Gray micaceous shaly sandstone and black carbonaceous shale...	200	205
Gray micaceous shaly sandstone, with carbonaceous foliations...	205	210
Gray calcareous limestone, partly organic fragmental, apparently concretionary. A fragment of a black silicified piece of a fern stem noted	210	215
Light gray sandy shale, micaceous	215	220
Gray sandstone, fine in texture, and with a calcareous matrix...	220	230
Light gray, sandy shale	230	250
Light gray sandy and micaceous shale and some calcareous concretionary material	250	255
Dark micaceous shale and micaceous gray sandstone	255	260
Gray, stony shale	260	265
Black fissile shale, "miners slate," and greenish fire clay	265	270
Gray sandy shale and black shale	270	275
Greenish gray shale of fine texture	275	280
Light gray shaly sandstone and shale, biotitic	280	285
Light gray sandy and micaceous shale, with some dark and soft marly material	285	290
Gray sandy shale	290	295
Dark gray sandy shale	295	300
Dark gray sandy and micaceous, stony shale	300	320
Dark gray stony shale and green fire clay	320	325
Dark gray shale of fine texture	325	335
Dark shale, with impressions of narrow leaf-like forms of vegetation and of fragments of thin shells	335	340
"Miners' slate," black, and some coaly shale	340	345
Gray sandstone, moderately coarse	345	350
Light gray sandy shale, with layers of shaly sandstone, which contains spherules of brown carbonate of iron	350	355
Gray calcareous limestone	355	360
Gray limestone and some black shale. <i>Chetetes milleporaceus</i> noted	360	365
Micaceous gray sandy shale or sandstone with some concretionary limestone	365	370
Gray micaceous sandstone and sandy shale	370	380
Gray soft shaly sandstone. Some fragments have a brownish tint	380	390
Gray shale of fine texture	390	395
Gray sandy shale, light	395	400
Micaceous and sandy stiff shale, light gray, with narrow impressions, carbonaceous, of small leaves and bits of brown tests of crustaceans. Many fragments of coal	400	405
Medium gray stiff shale, fine texture with many fragments of coal	405	410
Gray shale of fine texture, fossil fragments, bits	410	415
Shale, sandy, micaceous greenish gray, with leaf imprints	415	420
Shale, sandy, micaceous and greenish gray with small black fragments of vegetation	420	425

Logs—Continued.

	Depth in feet.	
	From	To
Sandstone, fine in texture, micaceous, shaly light gray.....	425	440
Gray shale of fine texture, greenish, only very slightly micaceous	440	445
Sandy shale, gray, micaceous, with bits of vegetation.....	445	450
Light gray shale, stony	450	455
Shale, greenish gray, micaceous	455	470
Dark greenish gray shale, of fine, even texture.....	470	475
Coal and fine gray shale or fire clay	475	480
Limestone, some dark and compact with very slow effervescence, some light, calcareous, crystalline cleavage like that in crinoid stems. Also some limestone and shale, with small spherules of clay iron stone, magnetic after fusion, $\frac{1}{8}$ - $\frac{1}{2}$ mm. in diameter. Wood in coaly pyrite.....	480	485
Shaly sandstone of light gray color	485	495
Dark gray stony micaceous shale	495	500
Gray sandstone and shale	500	505
Gray shale, stiff, of fine texture	505	510
Dark gray micaceous shale	510	515
Gray dark shale, stiff, micaceous	515	520
Gray limestone and coal, limestone is organic fragmental. Crinoid joints noted	520	525
Coal and some gray fire clay	525	530
Gray sandstone with a little micaceous shale	530	540
Gray sandstone with sandy shale	540	545
Gray sandstone, fine	545	550
Gray micaceous stony, (sandy) shale	550	570
Gray shaly fire clay or shale	570	575
Dark shale and a little coal. Shale, fine and carbonaceous.....	575	580
Dark shale, coal and fire clay	580	585
Black limestone (almost), effervescing slowly, with imbedded organic fragments and pyrites, yellow. Green grains or fillings in limestone, crinoid stems, fragments of shells, and spines, <i>fusulina</i> fossils	585	590
Dark gray stiff micaceous shale	590	595
Gray micaceous shaly sandstone and shale	595	600
Shaly sandstone, gray, micaceous	600	605
Dark calcareous limestone, with <i>Athyris</i> , crinoid stems, spines, in copious small fragments, and coal in coarse and fine fragments	605	610
Black shale, gray shale, fire clay and coal	610	615
Gray sandstone and black shale	615	620
Gray sandy shale	620	625
Sandstone, light gray, of fine texture thinly laminated, some yellow concretionary material	625	630
Gray shaly sandstone, micaceous	635	640
Gray sandy shale and fire clay	640	645
Gray sandy shale	645	650
Gray shale of fine texture	650	660
Gray sandy shale with straight laminations	660	665
Black shale, with gray blotches, laminated, "Miners' slate".....	665	670
Black shale and dark gray shale	670	675
Light greenish gray shale of fine texture	675	685
Black shale, almost slaty	685	690
Black stiff shale of fine texture	690	695
Dark gray shale	695	700
Gray sandy shale	700	705
Gray stiff shale, and some earthy shale	705	710
Dark gray earthy shale and light gray sandstone	710	715
Dark gray laminated shale	715	725
Dark gray, laminated, micaceous shale, with imprints of leaves and bits of vegetation	725	730
Gray shale, sandy and micaceous, with imprints of fragments of leaves	730	735
Dark, very dark shale, micaceous	735	740
Black shale, short "miner's slate"	740	745
Black shale, short "miner's slate, with pyrites	745	750
Gray sandstone with some coal	750	755
Sandstone, shale, laminated, dark gray	755	760
Dark gray shale	760	765
Shale, dark gray, some dark fire clay, coal	765	770
Coal, hardly anything else, large sample	770	775
Light gray sandy fire clay and coal	775	780
Light gray micaceous pyritiferous sandstone and some dark shale	780	785
Light gray micaceous sandstone	785	790
Micaceous light gray sandstone (and shale).....	790	795
Sandy gray shale and fire clay, dark, and showing slickensides..	795	800
Dark gray shale, fine in texture, with some slickensided pieces...	800	805
Black "miners' slate"	805	810
Black coaly shale, with a light gray rock composed of clay and con- taining small spherules of clay iron stone $\frac{1}{4}$ - $\frac{1}{2}$ mm. in diameter	810	815

Sa
Gr
Sa
Lij
Sh
Da
Co
Lib

;
;
;

Sh
Da
Gr
Gr
Da
Gr
Gr

j

Co:
Gr:
Gr:
Gr:
Gr:
Gr:
Da
Da
Bl:

c

i

f

Da
Gr
Sh
Da

c

Bl:
Gr:
Gr:
San

y

Gr:
Gr:
Gr:
Gr:
Gr:

Bla
Bla
Lig

Bla
Bla

Dal
Gr:

Gr:
Dal

Dal
Dal

a
Gr:

o
Dal

Bla
Bla

Gr:
Sar

Dal
Sha

Coa
Lig

Lig
Lig

Mic
San

Dal
Bla

Bla
ta

Logs—Continued.

	Depth in feet.	
	From	To
Dark gray shale with some fine small flakes of mica.....	815	820
Coal and some dark shale, with fragments of brown clay iron stone	820	825
Fire clay, shale, dark and light gray sandstone.....	825	830
Dark gray shale and shaly light gray sandstone.....	830	835
Black shale, coal and fire clay.....	835	840
Gray sandy shale and black shale, some coal.....	840	845
Gray sandy shale, black shale, some coal.....	845	850
Black and gray shale, laminated (?).....	850	855
Dark gray shale, micaceous, and sandy light gray shale.....	855	860
Black shale and gray shale, micaceous, imprints of leaves.....	860	865
Gray and black shale, some of the black shale with thin laminae of coal.....	865	870
Gray micaceous and sandy shale and shaly sandstone.....	870	875
Black coal shale ("miners' slate") some impure coal and some fire clay.....	875	880
Dark gray shale, stiff.....	880	885
Some gray shale, some shaly sandstone, some cloddy limestone with crinoid stems and other fossils in fragments. Much of the sample is a stony, sandy fireclay, in which are imbedded spher- ules of clay iron stone $\frac{1}{8}$ - $\frac{1}{2}$ mm. in diameter. On grinding and polishing some fragments containing these spherules a center of pyrite was seen in some of the spherules. The imbedded spherules lie quite close together, giving the appearance of oolitic rock.....	885	890
Gray micaceous sandy shale and fire clay.....	890	895
Gray shaly micaceous sandstone or sandy shale.....	895	905
Gray shale micaceous sandstone.....	905	910
Gray sandstone, foliated, with carbonaceous black foliations.....	910	920
Yellowish sandstone, ground up, floats on water.....	920	925
Gray sand, less oily. $\frac{1}{8}$ - $\frac{1}{4}$ mm.		

No. 2.—O. F. Edwards, No. 15.

Location—SE. $\frac{1}{4}$ sec. 7, Oblong Township.

Elevation—485 feet.

	Depth in feet.	
	From	To
Loess or silt, with some sand.....	0	5
Boulder clay, thoroughly leached.....	5	15
Yellow boulder clay, calcareous.....	15	20
Yellowish gray calcareous boulder clay with limestone pebbles...	20	25
Sand and gravel washed from boulder clay.....	25	40
Gray boulder clay.....	40	45
Sand and gravel, washed from boulder clay.....	45	50
Mostly sandstone, fairly coarse, with some limestone with frag- ments of fossils, probably <i>Productus semireticulatus</i> , <i>Retzia</i> , <i>Rhomopora lepidodendroides</i> , <i>Fislulipora</i> , <i>Tubipora</i> , and joints of crinoid stems.....	50	55
Sandstone, gray, micaceous, friable.....	55	65
Gray shale, slightly micaceous, of comparatively loose consistency	65	85
"Dirt bed" material, dark crumbling silt clay, with some coal...	85	90
Impure fire clay and shale, much coal, and concretions of lime and of carbonate of iron.....	90	95
Dark shale.....	95	100
Gray shale, micaceous.....	100	105
Gray shale and marly material. The latter contained the pygidium of a small trilohite, fragments of bryozoa, and joints of crinoid stems.....	105	110
Almost black shale, containing small ostracods, one-thirtieth of an inch in length and an impression of some smooth flat objects, having the shape of an equilateral triangle with perfectly straight sides measuring a sixth of an inch.....	110	115
Black shale with impressions of fucoidal bands a tenth of an inch in width. Part of sample a dark limestone with crinoid stems, a small pentagonal crinoid plate, and a small brachiopod (<i>Ambocoeia umbonata</i>).....	115	120
Dark limestone, of characteristic appearance of a "clod" lime- stone (i. e., small limestone overlying a coal), clay, fissile, shale and coal. The limestone has the same fossils as in the previous number.....	120	125
Dark limestone as above, with irregularly bending <i>Ammodiscus</i> tubes about one-fifth inch in diameter, also coal and some fire clay. The coal probably lies at a depth of about 125 feet and is underlaid by the fire clay.....	125	130
Gray micaceous sandstone.....	130	140
Micaceous shaly sandstone and sandy shale.....	140	145

Logs—Continued.

	Depth in feet.	
	From	To
Micaceous shaly sandstone.....	145	150
Micaceous shaly sandstone and sandy shale.....	150	155
Coal, some "clod" and some shale.....	155	160
Gray micaceous sandstone.....	160	165
Gray micaceous sandstone with one large piece of coal and one large piece of black shale, containing fragments of some thin shells, probably a <i>Lingula</i>	165	170
Gray sandstone, with some calcareous rock.....	170	175
Shaly micaceous gray sandstone.....	175	180
Shaly micaceous gray sandstone, with some small fragments of a calcareous rock.....	180	185
Dark gray sandy shale with large flakes of mica.....	185	190
Dark gray micaceous shale.....	190	195
Gray micaceous shale, with shreds of vegetation.....	195	200
Limestone, compact, yellowish white and dark gray, containing crinoid stems and fragments of other unidentified fossils. Splits into thin fragments, and has a sort of waxy lustre.....	200	210
Gray shale, somewhat micaceous.....	210	215
Fire clay, shale, and sandstone.....	215	220
Mostly sandstone having a calcareous matrix and a few imbedded organic calcareous fragments.....	220	225
Sandy shale or shaly sandstone, with some black mica.....	225	230
Gray sandstone.....	230	235
Gray sandstone, laminated, with thin layers of carbonaceous material.....	235	240
Dark gray sandstone, laminated, micaceous, with thin carbonaceous foliations, and with a calcareous cement.....	240	245
Sandstone, dark gray, shaly, biotitic. Some fragments show yellow specks of presumably concretionary iron carbonate, other fragments are closely studded with minute grains of pyrite....	245	250
Some sandstone like the previous, dark shale and fire clay.....	250	255
Dark shale and sandstone, both biotitic.....	255	260
Black shale and some fragments of a coarse shell breccia, containing crinoid stems.....	260	270
Gray sandstone.....	270	275
Gray sandstone, with a brown, slowly effervescing sandstone.....	275	280
Gray sandstone, with a brown, slowly effervescing sandstone, with more of the brown rock, which seems to have a concretionary (oolitic) structure and consists of mainly carbonate of iron with some calcareous grains.....	280	285
Gray sandstone, micaceous.....	285	295
Gray sandstone, micaceous, with some shaly sandstone.....	295	300
Gray sandstone, micaceous.....	300	310
Gray shale.....	310	315
Gray shale with small ostracods, and a spiral <i>Ammodiscus</i>	315	320
Gray shale, with narrow, ribbon-shaped impressions of vegetation, ostracods and a spiral <i>Ammodiscus</i>	320	325
Gray sandy shale and micaceous sandstone.....	325	330
Micaceous sandstone and coarse gray shale.....	330	335
Coarse sandstone.....	335	340
Sandstone, with yellow grains (concretionary) of carbonate of iron, larger than the sand grains.....	340	345
Gray shale with some very compact fragments of carbonate of lime concretions.....	345	350
Faintly yellowish gray limestone, splitting into thin chips, with many unrecognizable fragments of organic origin.....	350	360
Limestone, like the preceding, with a brachiopod shell fragment, a <i>Zaphrentis</i> , and joints of crinoid stems. Also some dark gray shale.....	360	365
Greenish gray shale.....	365	370
Gray micaceous sandstone and shale.....	370	385
Gray shale of fine texture.....	385	395
Bluish gray sandstone.....	395	400
Shale, mostly dark gray, and of fine texture.....	400	405
Sandstone and sandy shale.....	405	410
Micaceous sandstone and shale.....	410	415
Gray silty shale.....	415	420
Dark gray shale.....	420	425
Gray sandstone and shale.....	425	430
Gray shale and some impure coal.....	430	435
Micaceous gray shale, with fragments of concretions of carbonate of iron.....	435	440
Gray shale.....	440	445
Gray shale or fire clay.....	445	450
Gray shale, stony and dark, micaceous.....	450	455
Some gray shale like the above. But mostly a dark, dirty yellow clay, too oily to mix with water, giving off gas and oil when heated and losing much of its weight, probably 30 or 40 per cent.....	455	460

Logs—Continued.

	Depth in feet.	
	From	To
Like the previous, with much coal	460	465
Sandstone, gray, micaceous, and some pieces of a black limestone, containing fragments of fossils	465	470
Oily clay, with coal and gray stony shale, some pyrite	470	475
Like the previous, with much coal and some fossiliferous limestone	475	480
Sandstone, with some yellow limestone containing organic fragments	480	485
Gray shale and some sandstone	485	490
Dark gray shale	490	500
Dark gray shale with a small <i>Ammodiscus</i> and some narrow fucoid markings	500	505
Gray limestone with imbedded yellow fragments of fossils with some black shale and coal	505	510
Mostly fire clay and coal	510	515
Sandstone, some coarse, some thinly laminated	515	520
Sandstone, comparatively coarse	520	525
Sandstone of average texture	525	535
Dark arenaceous shale	535	540
Shaly sandstone, black shale and coal	540	545
Some coal, fire clay, and dark sandy shale	545	550
Mostly coal, some black shale and fire clay	550	555
Gray sandstone, with a compact yellowish gray limestone breaking frequently into rectangular fragments, and probably of concretionary origin	555	560
Dark shale and sandy gray shale with fragments of concretions of carbonate of iron	560	565
Gray shaly sandstone	565	570
Dark "cloddy" shale and coal with some sandstone	570	575
Coal, stony fire clay and sandy shale	575	580
Gray sandy shale	580	585
Shaly sandstone	585	590
Shaly sandstone, greenish sandy shale, coal and concretionary carbonate of iron	590	600
Gray shale	600	605
Dark gray shale, hard	605	630
Dark gray shale with a fine textured and compact limestone, in part gray, in part yellow, apparently concretionary	630	635
Gray shale, with concretionary limestone like that in the above ..	635	640
Gray sandstone and some black shale	640	645
Gray fine-grained sandstone, with some black coaly shale	645	650
Like the preceding, but less shale	650	655
Gray shale and black shale	655	660
Gray shale	660	665
Black micaceous shale and gray shale with concretionary material ..	665	670
Black micaceous shale with concretionary material	670	675
Gray and black shale and coal	675	680
Coal and gray shale	680	685
Gray shaly and micaceous sandstone with much carbonaceous material, and with imprints of vegetation abundant in some fragments	685	690
Dark gray sandstone of fine texture with thin layers of carbonaceous material	690	695
Dark gray micaceous shale with imprints of fern leaves	695	700
Dark gray shale, micaceous	700	705
Dark gray shale, micaceous, stony	705	725
Black shale, hard	725	730
Black shale	730	735
Black shale, with "clod" limestone containing a crinoid stem and some coal	735	740
Gray micaceous sandstone, comparatively coarse in texture	740	745
Gray sandstone	745	750
Shale, almost black	750	755
Black shale and coal	755	760
Black shale and fragments of "clod" limestone, coal and fire clay ..	760	770
Gray micaceous sandstone, with brown concretionary material	770	775
Gray sandstone and black shale	775	780
Gray shale and some sandstone	780	785
Gray sandstone and shale, with much brown concretionary material	785	790
Like the preceding, with some calcareous material	790	795
Gray shale, and some fire clay with thin carbonaceous flakes imbedded	795	800
Dark gray shale, micaceous	800	810
Shale, almost black	810	820
Black and gray shale, some "clod" limestone, some fire clay and some concretionary carbonate of lime	820	825
Black clayey shale, some coaly shale, some brown and soft concretionary material	825	830
Dark bluish shale and some sandstone	830	835

Logs—Continued.

	Depth in feet.	
	From	To
"Clod" limestone, dark and black shale, coal, and greenish shaly fire clay	835	840
Bluish gray shaly fire clay and black shale	840	845
Gray fire clay and some coal	845	850
Black shale, gray shale and sandstone	850	855
Gray shale and shaly sandstone	855	860
Black shale and coal, with some concretionary carbonate of iron..	860	875
Black shale and gray shale with much concretionary carbonate of iron and some coal	875	880
Dark gray shale with concretionary carbonate of iron	880	885
Dark gray shale, with much concretionary carbonate of iron	885	890
Black micaceous shale	890	895
Black shale slightly micaceous	895	900
Mostly black shale, with some concretionary material	900	905
Thinly laminated shale with alternate layers light and dark	905	910
Dark gray, stiff shale	910	915
Dark gray shale, laminated, with alternate layers of light, sandy, dark and finer texture	915	920
Laminated shale, sandy laminae, about four, in a thickness of a sixteenth of an inch	920	925
Like the previous, but with sandy laminae, thicker	925	940
Coaly black shale and gray shaly sandstone, both micaceous	940	945
Black shale, greenish gray shale, and sandstone	945	950
Incoherent gray sand, some 70 per cent of the grains measuring from one-eighth to one-fourth of an millimeter in diameter, some 20 per cent measuring less than one-eighth mm. and only a few per cent measuring more than one-fourth of a mm. The sand floats on water	950	955
Black shale	955	960
Black shale, brownish concretionary carbonate of iron and some sand	960	965
Gray, faintly brownish sand which floats on water, with some coherent lumps which emit oil when heated	965	970
Thinly laminated shaly sandstone, alternate laminae of dark and light material. Laminae mostly about one-half millimeter in diameter. Slightly effervescent with acid	970	975
Like the preceding, but more shaly and lamination less frequently to be seen	975	980
Dark stony shale, with thin layers of alternating light and dark material, with some concretionary brownish carbonate of iron ..	980	985
Sandy laminated shale or shaly sandstone, layers bending and curving	985	990

NOTE—Dr. Udden adds the following statement to the above log: "The limestone at 360 feet is probably correlative with a limestone horizon which occurs at about 160 feet above Coal No. 6, in the Belleville region. The limestone at 200 feet is most likely an equivalent to the Carlinville limestone about 150 feet higher in the section. Coal No. 6 is believed to be the coal at 510 feet. The several coal seams penetrated are no less than 14 or 15 in number, and fall into three groups. The lower groups, consisting of five coals probably of small size, includes the coals from 670 to 850 feet below the surface. It probably includes coals 1 and 2 of northern Illinois. The middle group comprises the coals from 430 to 580 feet below the surface and no doubt includes Coal No. 6. The uppermost group of coal beds, comprising some small coals of the "Upper Coal Measures" of Worthen, are the coals in the upper 200 feet of the section. The sandy shale in the lower part of the section, which contains the oil sand, exhibit a quite persistent lamination of thin dark and light layers. It is believed that this feature may be useful in their identification in the nearest outcrops."

No. 3.—*L. R. Newlin, No. 21.*

Location—SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 27, T. 6 N., R. 14 W., Martin Township.
Elevation—498 feet.

	Depth in feet.	
	From	To
Drift	1	25
Dark limestone, brown limestone, fragments of coal and yellow sand	25	30

Logs—Continued.

	Depth in feet.	
	From	To
Dark limestone with sand	30	40
Gray sandstone with infiltrated lime	40	45
Gray sandstone, some yellow limestone, and siderite	45	50
Gray sandstone with some yellow limestone. Pyrite noted	50	60
Coarse gray micaceous sand with fragments of coal	60	65
Coarse gray micaceous sand	65	70
Coarse micaceous sandstone	70	75
Coal and some fire clay	75	80
Gray micaceous sand. A little lime in sand	80	110
Dark micaceous shale and sand	110	115
Gray micaceous shale and sand. A few fossil fragments	115	120
Limestone, fragmental, organic, crinoid fragments and bryozoa noted	120	125
Light gray shale of fine texture	125	130
Limestone, in part fragmental, and some shale	130	135
Gray sandy shale with some crinoidal limestone	135	140
Gray micaceous sandy shale, with some limestone	140	145
Gray micaceous shale	145	150
Gray micaceous sandstone and much darker clay iron stone	150	155
Gray micaceous shaly sandstone, with imbedded shreds of vegetation	155	160
Gray micaceous shaly sandstone	160	170
Fine grained, gray micaceous sandstone with interstitial lime	170	175
Some black fissile shale. Mostly a dark blotched organic breccia limestone, containing many crinoid stems, some small <i>Athyris</i> and some crinoid spines	175	180
Like the preceding, with some sandstone and coal	180	185
Sandstone, limestone and shale	185	190
Micaceous sandstone, with some laminated sandy shale	190	195
Gray sandstone, quite coarse	195	210
Micaceous silty gray shale	210	240
Gray shale, and some dark shale	240	245
Black shale, clay iron stone, crinoid stems, <i>Bellerophon</i> , <i>Athyris</i> , a <i>cyathophylid</i> , two gastropods	245	250
Black shale and coal	250	255
Yellowish and gray concretionary siderite and limestone, with some fire clay and coal	255	260
Gray shale	260	265
Gray sandstone and some dark shale	265	270
Gray micaceous sandstone	270	275
Laminated gray sandstone of fine texture	275	280
Gray shale and fire clay	280	285
Gray sandstone	285	290
White sandstone with siderite concretions	290	295
Laminated sandstone	295	300
Micaceous sandstone and dark shale	300	305
White micaceous sandstone	305	330
Gray sandy shale, micaceous	330	345
Gray micaceous sandy shale and some dark gray shale	345	350
Like the preceding with some clay iron stone	350	355
Mostly coal, some shale and some fragments of concretionary limestone	355	360
Gray sandstone with siderite	360	365
Gray sandy shale, micaceous	365	375
Gray sandstone, with some limestone, white	375	380
Gray sandstone, with interstitial calcareous material and some pure white limestone	380	385
Greenish gray sandstone	385	390
Gray sandstone, with many concretionary spherules about ½ millimeter in diameter	390	395
Gray sandstone	395	400
Dark gray sandy shale, stiff	400	405
Dark gray micaceous shale	405	410
Dark gray shale	410	415
Dark shale and limestone, with pyrite calcite with many crinoid stems, and an <i>Estheria</i> (?)	415	420
Coal with some limestone fragments and shale	420	425
Coal and fire clay	425	430
Gray sandstone, with some yellow fragments or concretionary material	430	435
Gray sandstone	435	440
White sandstone	440	445
Yellowish white sandstone	445	450
Dark shale	450	455
Black shale and coal	455	460
Gray sandstone, micaceous	460	465
Gray limestone and some large quartz grains	465	470
Gray sandy shale, micaceous	470	475

Logs—Continued.

	Depth in feet.	
	From	To
Sandstone and some limestone.....	475	480
Shaly sandstone, with some siderite concretions.....	480	485
Black and dark micaceous shale.....	485	490
Black dolomitic limestone, with calcite, Rhombopora, lepidodendroids, crinoid stems.....	490	495
Black limestone, with crinoid stems and coal.....	495	500
Gray micaceous sandstone, with some interstitial calcareous material.....	500	510
Gray sandstone and a dirty yellow dolomitic limestone, concretionary (?).....	510	515
Limestone.....	515	520
Gray silty shale with carbonaceous shreds imbedded.....	520	525
Gray silty shale with thin layers of shiny coal of silky lustre. Coal layer in one fragment adhering to the shale.....	525	530
Gray shale of fine texture.....	530	535
Dark shale of fine texture.....	535	555
Black shale and coal, mostly impure.....	555	560
White sandstone of fine texture.....	560	565
Light gray shale, with small spherical siderite concretions.....	565	570
Gray shale, with much siderite, in fragments and in minute spherical concretions. Some bright red fragments noted, "rusty"....	570	575
Shaly sandstone and sandy shale, gray, with siderite as in preceding sample.....	575	580
Sandy shale, gray, with siderite fragments.....	580	585
Gray sandstone, some shale and siderite.....	585	590
Shaley sandstone or sandy shale, gray.....	590	595
Sandstone, black shale and "clod," with some coal and siderite concretions.....	595	605
Shale and shaly sandstone, with fragments of siderite concretions and coal.....	605	610
Greenish fire clay and shale.....	610	615
Shaly sandstone, gray.....	615	620
Black miner's slate, with siderite concretions.....	620	625
Black miner's slate, with sandstone and gray shale.....	625	630
Gray sandy shale.....	630	635
Dark gray sandy shale, micaceous.....	635	645
Gray laminated shaly sandstone.....	645	650
Dark gray sandy shale.....	650	655
Black stiff shale, almost miner's slate.....	655	665
Black stiff shale and impure coal.....	665	670
Black shale and black concretionary limestone, with fossils.....	670	675
Gray sand and gray sandy shale with some coal.....	675	680
Coal with very bright (black) lustre and fire clay.....	680	685
Coal of bright lustre and brownish earthy streak and some fire clay.....	685	690
Gray gritty fire clay and dark shale.....	690	695
Shale, gray.....	695	705
Shale, gray, and some siderite.....	705	710
Dark limestone, some dark shale and pyrite.....	710	720
Dark shale, some dark limestone and spherulitic siderite.....	720	725
Shale, dark, some coal; a little dark limestone.....	725	730
Dark shale, some coal, and spherulitic siderite.....	730	735
Gray micaceous shale, and bits of yellow limestone.....	735	740
Gray micaceous shale, and fragments of siderite.....	740	745
Dark micaceous shale, some siderite, bits of coal and lime.....	745	750
Gray micaceous shale and siderite.....	750	755
Gray micaceous shale, some fire clay, coal and pyrite.....	755	760
Coarse gray micaceous shale, pyrite, little shale.....	760	770
Black shale and some coarse sandstone.....	770	775
Coal and fire clay, and some gray shale.....	775	780
Coal and fire clay, and some gray fire clay with pyrite.....	780	785
Black shale, bits of yellow limestone, and spines of brachiopods, and spherulitic siderite.....	785	790
White sandstone and shale, black, some yellow limestone and coal, and spherulitic siderite.....	790	795
Dark shale, some little sandstone, siderite and limestone.....	795	800
Black shale and some siderite.....	800	810
Black shale.....	810	820
Gray micaceous shale and some sandstone.....	820	825
Limestone, dark and white; some sandstone with infiltrated lime; gray micaceous shale, pyrite and some crinoid joints.....	825	830
Dark and white limestone with crinoid stems and pieces of shells, and pyrite.....	830	835
Gray micaceous sandstone, and some dark and white limestone...	835	840
Black micaceous shale, some sandstone, and white limestone.....	840	845
Black micaceous shale.....	845	850
Black micaceous shale, some white sand and siderite.....	850	860
Gray sandstone and dark shale.....	860	865
Gray sandstone, some dark shale and siderite.....	865	870

Logs—Continued.

	Depth in feet.	
	From	To
Coarse gray sandstone and a little shale.....	870	875
Gray micaceous sand.....	875	885
Gray sand and some dark shale.....	885	890
Gray sand, white limestone, a little shale and pyrite.....	890	895
Gray sandstone, bits of limestone, shale and siderite.....	895	905
Gray micaceous sand.....	905	940
Gray micaceous sand, and some dark shale.....	940	950
Dark sandy micaceous shale.....	950	955

No. 4.—C. E. Siler, No. 4.

Location—NE. corner sec. 5, Honey Creek Township.

Elevation—495 feet (estimated).

	Depth in feet.	
	From	To
<i>Pleistocene:</i>		
Loess or yellow loam.....	1	5
Gravel and sand.....	5	10
Sand and gravel.....	10	15
Sand and gravel washed from boulder clay.....	15	20
Boulder clay.....	20	40
<i>"Coal Measures":</i>		
Limestone, with imbedded crinoid stem, a small Spirifer cameratus, a small gasteropod, and a piece of a plant stem.		
Some roof shale.....	40	45
Shale, greenish gray, micaceous.....	45	50
Gray shale.....	50	55
Fine-grained micaceous sandstone with a calcereous matrix...	55	62
Arenaceous, gray shale.....	62	68
Micaceous, gray shale.....	68	74
Micaceous, dark gray shale.....	74	80
Micaceous sandstone, with fragments of concretions of carbonate of iron.....	80	86
Sandstone, gray micaceous, calcareous and shaly, with many fragments of shells of yellowish color.....	86	92
Gray shale and micaceous shaly sandstone, with a small Myalina, and many fragments of shells. Some coal noted.....	92	98
Some limestone, but mostly shale. The shale is dark gray, micaceous, and marly. It has many minute, apparently concretionary grains, yellow, of carbonate of iron. These appear like coarser grains in a fine textured matrix. The limestone is dark with imbedded flat fragments of Myalina, shells, and one piece was seen with imbedded trenchantly marked tubules, believed to be irregularly curving forms of Ammodiscus, measuring from .1 to .15 mm. in diameter....	98	103
Micaceous sandstone or sandy shale, with some brownish limestone	103	109
Micaceous gray sandstone of fine texture, almost a shale....	109	114
Micaceous sandstone and some green grains, with some brown calcareous coaly fragments.....	114	119
Fine-grained sand, micaceous, and with brown and green grains, as above.....	119	139
Like the previous, but with occasional carbonaceous fragments	139	145
Gray, micaceous sandstone, with some dark and some green grains, and some shreds of carbonaceous material.....	145	150
Black fissil "miner's slate" with prytitized fossil shells, one probably being an Aviculopecten, another like a minute Myalina	150	155
Some shaly fire clay and a little coal, but chiefly gray micaceous shale with minute concretions of carbonate of iron of the size of small sand grains.....	155	160
Gray micaceous shaly sand. One large fragment showing lines believed to be wave marks.....	160	165
Gray slightly micaceous shale, with very thin calcareous laminae	165	170
Gray shale, slightly micaceous shale with a brownish minute disc-shaped fossil of spiral structure, probably an Ammodiscus	170	175
Gray shale, faintly micaceous.....	175	180
Black fissile shale, with a very fine rectangular reticulation seen on a cleavage plane. Some fragments of coal.....	180	185
Greenish gray fire clay and shale, with fragments of dark concretionary limestone.....	185	190
Fine-grained micaceous sandstone or shale, with yellow specks of concretionary siderite.....	190	200

Logs—Continued.

	Depth in feet. From	To
<i>Coal Measures—Continued.</i>		
Gray, dark, and compact concretionary carbonate of iron in large fragments.....	200	205
Dark gray shale, with <i>Ammodiscus</i> (?)	205	210
Mostly dark concretionary carbonate of iron in large fragments, with some dark stony shale	210	215
Dark shale of fine texture	215	220
Dark shale slightly micaceous, with <i>Ammodiscus</i> (?) and minute shreds of other fossils	220	225
Dark micaceous shale, slightly calcareous	225	230
Like the previous, with minute shreds of vegetation.....	230	240
Dark micaceous shale, like that in the previous sample, with <i>Ammodiscus</i> (?) and a small ostracod.....	240	245
Dark micaceous shale, with impressions of fern leaves, and with a spiral <i>Ammodiscus</i> (?) and one tube of an <i>Ammodiscus</i> (?) only slightly curving. Some keeled impressions were noted on one fragment and stem joints and spines of crinoids were also noted	245	250
Dark gray shale	250	255
Gray sandy shale	255	260
Gray sandy shale, or shaly sandstone, showing some dark grains under the lens	260	265
Shale, greenish gray, sandy and micaceous	265	270
Greenish gray micaceous sandstone and red clay marl.....	270	275
Greenish gray sandy shale	275	280
Comparatively coarse sandstone, with some green and some pink grains. Also some lumps of fire clay, which contain small spherical nodules of black oxide of manganese from one-fourth to one-third mm. in diameter. Some of these concretions are grown together in groups of two and three	280	286
Comparatively coarse sandstone, with some interlaminated shale	286	290
Mostly sandstone, gray and of fine texture, with some shale. Color various	290	295
Sandy gray shale, or shaly sandstone	295	302
Micaceous gray shale	302	308
Dark gray shale, not micaceous	308	320
Very dark shale, carbonaceous and sandy. Most of it is finely laminated and shows shreds of vegetation	320	333
Shaly sandstone or shale, thinly laminated, containing brownish yellow grains (concretionary?) larger than the grains of the rock and also some still larger black grains..	333	350
Like the previous, with the brown grain least abundant in the layers of the finest texture, which are carbonaceous...	350	356
Sandstone, with interlaminated carbonaceous streaks showing vegetable tissue	356	362
Coal, shale, and sandstone	362	368
Mostly fire clay	368	374
Mostly concretionary material, carbonate of lime and iron, and some shale	374	380
Concretionary limestone and carbonate of iron, in shale.....	380	387
Light gray micaceous and sandy shale	387	394
Micaceous and sandy gray shale	394	401
Micaceous sandstone and gray shale	401	407
Dark gray shale	407	413
Dark gray limestone, consisting of organic fragments, some black shale and coal. The limestone contains <i>Chonetes mesolobus</i> (?), crinoid stems and a gasteropod (<i>Bellerophon carbonaria</i> ?)	413	419
Fire clay, gray and black shale, and coal	419	426
Gray shale	426	432
Gray sandstone of fine texture	432	438
Gray shale, arenaceous and micaceous	438	450
Shaly sandstone, micaceous and with rusty specks	450	456
Gray shale, micaceous and sandy	456	462
Dark gray shale, micaceous and sandy	462	468
Like the above, but darker	468	480
Almost black dolomitic limestone, uniform in texture, emits sulphurous odors when heated and becomes slightly magnetic before the blowpipe, and contains joints of crinoid stems, <i>Chonetes mesolobus</i> (?) <i>Rhombopora lepidodendroides</i> (?), fragments of brachiopod shells, and <i>Fusulina</i> of the kind occurring in the limestone above Coal number 6.....	480	486
Black fissile shale and some coal, with limestone.....	486	492
Gray sandy shale and some dark shale	492	498
Gray slightly sandy shale	498	504
Soft gray micaceous shale	504	510
Gray shale, soft and micaceous, with some dark shale showing shreds of vegetation	510	516

*Logs—Continued.**Coal Measures—Continued.*Depth in feet.
From To

Gray slightly micaceous sandstone, with some large and thin fragments of black dolomitic limestone	516	522
Gray sandstone, with some limestone like that in the previous sample	522	528
Dark gray highly micaceous shale, with scales of biotite and on fresh fractures having an appearance like that of Archaen schists	528	534
Gray sandstone and sandy micaceous shale, with some dark shale and fragments of coal	534	540
Dark gray sandy shale, micaceous, with some fire clay	540	546
Dark shale of fine clayey texture	546	552
Dark gray shale, micaceous and stony	552	564
Dark gray shale, of clayey texture	564	570
Dark gray shale, with narrow fucoid bands in some cleavage planes	570	576
Black fissile shale	576	588
Mostly light gray sandstone, some gray shale, with fragments of coal and limestone	588	594
Mostly light gray sandstone with some dark shale	594	600
Dark micaceous, shaly sandstone	600	606
Dark micaceous, sandy shale	606	612
Dark, almost black, shale	612	618
Dark, almost black, shale, with fragments from concretion of carbonate of iron	618	624
Gray shale, of clayey texture	624	636
Gray shale, with some little mica	636	642
Like the previous sample, but slightly coarser and with a little more mica	642	648
Black shale, of fine texture, but with some mica, and with earthy lustre	648	654
Black shale, much pyrites of iron, and some coal. The shale has imbedded calcareous fossils among which a piece of lamellibranch valve and a Bellerophon were noted, and also impressions of an insect wing (?). In the fragments of pyrites was noted a Nucula, a Bellerophon carbonaria (?) in part filled by zinc blende, and a fragment of a brachiopod. In the coal some woody tissue was noted.....	664	660
Light gray sandy fire clay filled with small crystals of pyrites	660	666
Dark gray micaceous and sandy shale	666	672
Dark gray shale of fine texture, with pyrites and coal	672	678
Black fissile shale and finely laminated coal with brown streak. Woody fibre seen in some pyrite	678	684
Shaly fire clay, light gray and stony	684	690
Gray shale and sandstone	690	696
Sandstone, somewhat coarse, laminated, in alternate layers of white and carbonaceous black material, some layers micaceous	696	708
Dark gray shale, stony, sandy and micaceous	708	714
Gray shale, stony, sandy and micaceous	714	720
Dark shale, with some laminated coal and some fire clay	720	726
Gray sandstone, shaly and micaceous	726	732
Soft gray shale	732	738
Some gray shale, and some dark micaceous shale with concretionary carbonate of iron	738	744
Almost black fissile shale, with concretionary carbonate of iron	744	750
Gray sandstone of fine texture	750	756
Dark gray shale, arenaceous and micaceous	756	762
Laminated, gray sandstone, micaceous, alternate layers in black and carbonaceous, the black layers very thin, the light layers in several cases measuring one-tenth of an inch in thickness	762	768
Coarse micaceous sandstone, laminated with alternate layers of dark carbonaceous shale	768	786
Like the previous, sandstone coarser and softer	786	798
Dark gray shale and some lighter shale	798	804
Almost black shale, fine in texture	804	817
Light gray sandy shale, slightly micaceous	817	820
Dark gray and light gray shale of fine texture	830	836
Gray sandstone, of very fine texture	836	848
Dark bluish gray shale of very fine texture with concretionary carbonate of iron	848	854
Almost black shale, very fine in texture	854	860
Coarse sandstone	860	866
Almost black shale, fine in texture	866	878
Almost black shale, with biotite	878	884
Black shale, fine in texture	884	902
Gray sandstone, fine grained	902	908

Logs—Continued.

	Depth in feet.	
	From	To
<i>Coal Measures—Concluded.</i>		
Gray sandstone	908	914
Black shale of fine texture, with concretions of carbonate of iron	914	938
Gray shale and sandstone, with some large and thin chips of coal	938	944
Gray soft sandstone and shale. The rock in this and the previous sample appears to be a mixture of alternating layers of shale and sandstone	944	950
Gray soft sand, only a single fragment of loosely coherent rock, remaining in the sample. Size of grains is about one-fourth mm. in diam. Apparently oil sand; the grains float on water	950	955
Gray sand, with grains mostly from one-eighth to one-half mm. in diameter. The largest grains all have crystalline facets resulting from secondary growth. Sand floats on water	955	959
Sand like the previous, but faintly brownish yellow	959	963
Sand like that in the three previous samples, except that it is more nearly white in color	963	967

NOTE—Dr. Udden states that two specimens of a *Fusulina* were found in a limestone occurring at the depth of 480 to 486 feet from the surface, and this no doubt is the limestone which forms the cap-rock over Coal No. 6. The rock itself has been altered to a dark dolomite, effervescing very tardily in acid. It has a dark gray color which is evidently due to the presence of iron pyrites in microscopic particles. On heating in a closed tube it gives off sulphurous odors and becomes slightly magnetic. The entire section represented by the two samples studied consists of variations of shales, sandstones, limestones, coals and fire clays, with calcareous concretionary matter, and more frequently concretions of carbonate of iron. They all have the general appearance characteristic of the Pennsylvanian series in this region. About a dozen coal beds were penetrated, which occur in three groups, not counting an evidently thin bed of somewhat shaly coal, which lay at a depth of 904 feet below the surface and only a few feet above the oil sand. The lowest of these groups which presumably includes equivalents of Coals Nos. 1 and 2 in northern Illinois, is represented by three seams at 720, 678 and 660 feet below the surface. The middle group, which includes Coal No. 6 is represented by one coal at 540 feet, by Coal No. 6 at the depth of 485 feet, another coal, overlain by limestone, at 420 feet and a coal overlain by sandstone at 365 feet. The coal beds of the "Upper Coal Measures" of Worthen are represented by an apparently small seam of coal at a depth of 185 feet, one small coal associated with a capping calcareous bed at the depth of 95 feet, and a black shale under a limestone at the very surface of the bed rock under the drift, fifty feet below the surface. The spiral shell of an *Ammodiscus* was observed in cleavage surfaces of some shales in the "Upper Coal Measures" and presumably the same fossil, in the form of irregularly bending tubes occurred in some limestone at the depth of 100 feet.

No. 5.—C. F. Curtis, No. 8.

Location—NE. corner sec. 11, Oblong Township.

Elevation—475 feet (estimated).

	Depth in feet.	
	From	To
Yellow boulder clay	1	10
Boulder clay and drift gravel	10	15
Drift gravel and sand	15	20
Drift gravel and sand, with some boulder clay	20	25

Logs—Continued.

	Depth in feet.	
	From	To
Drift sand and gravel	25	30
Drift	30	35
Drift sand and gravel	35	60
Drift gravel and some sand	60	70
Drift sand and gravel. A few bits of coal	70	75
Drift sand and gravel	75	90
Drift sand and gravel, with some shale	90	110
Sandy micaceous shale	110	115
Dark micaceous shale	115	120
Sandy dark gray shale	120	135
Sandstone, sandy shale and coal. Some fragments of limestone noted and some pyrites with woody fibre	135	140
Black shale, fire clay and coal	140	145
Gray and yellow limestone. Gray sandstone and coal with some shale	145	150
Gray sandstone, micaceous and of fine texture	150	155
Like the preceding, with some siderite	155	165
Moderately coarse gray and yellow micaceous sand	165	170
Gray shale, micaceous sand	170	180
Moderately coarse micaceous sandstone	180	190
Gray, fine sandstone, and yellow concretionary limestone, in which is considerable pyrite	190	195
Gray micaceous sandy shale and concretionary siderite	195	205
Gray micaceous sandy shale and a few pieces of yellow limestone	205	210
Gray micaceous sandy shale	210	215
Gray micaceous shale	215	220
Gray micaceous shale, a few pieces of gray sandstone, some white limestone and coal	220	225
Gray micaceous shale, with imprint of vegetation, some fire clay and pieces of white limestone	225	230
Dark gray micaceous shale	230	235
Dark gray and gray micaceous shale	235	240
Dark micaceous shale	240	245
Black shale, a few pieces of sandstone, siderite, yellow limestone and pyrite	245	250
Black shale and coal, some pure calcite and white limestone	250	255
Black shale and coal, some dark limestone and gray sandstone	255	260
Darkish gray limestone (nodular in structure), some coal gray sandstone and bits of pyrite	260	265
Gray shale, concretionary yellow limestone, some white limestone, some gray sandstone, and some black coaly shale	265	270
Yellowish limestone, some gray limestone, gray sandstone, some concretionary sandstone, a little coal and pyrite	270	275
Greenish gray stony shale, with a few very thin laminae of coal	275	280
Gray micaceous stony shale	280	290
Dark gray stony shale	290	295
Dark greenish gray shale of fine texture	295	305
Dark shale of fine texture	305	310
Gray sandstone, brown concretionary siderite, gray shale, black shale, gray limestone, crinoid stems and a few fragments of coal	310	315
Gray shale and grayish brown fossiliferous limestone, with crinoid stems, brachiopod spines, pieces of shells, etc. A piece of con- cretionary siderite showed a fissure filled with clear calcite	315	320
Gray shale, concretionary brown siderite, sandstone and coal. The limestone contains organic fragments. The coal is impure and shows very thin lamination	320	325
Gray sandstone containing shreds of carbonaceous material and pyrite, with some shale	325	335
Light gray thin-bedded micaceous sandstone, some pieces with infiltrated lime	335	345
Mostly a grayish limestone containing some fine siliceous mater- ial, with some yellow and some white limestone and some black shale	345	350
Gray limestone and some gray sandy lime, showing occasional obscure fragments of fossils	350	355
Gray limestone and white limestone of waxy lustre	355	360
Greenish gray micaceous and sandy shale and some lime	360	380
Greenish gray shale of somewhat fine texture	380	385
Dark gray shale of somewhat fine texture	385	395
Gray shale	395	400
Dark almost black micaceous shale, showing narrow traversions impregnated with thin green films of pyrite	400	405
Black shale with shreds of carbonaceous vegetation. Some gray shale and some siderite	405	410
Gray shale with carbonaceous shreds, some black coaly shale. A few pieces of siderite noted	410	415
Gray and black, coaly shale and gray sandstone	415	425
Gray sandstone, some gray shale and pieces of siderite	425	435

Logs—Continued.

	Depth in feet.	
	From	To
Gray micaceous sandy shale, some gray shale and concretionary siderite	435	440
Dark gray shale	440	445
Dark gray shale and concretionary siderite	445	455
Dark gray shale, with imprints of vegetation, and some siderite...	455	460
Gray shale with imprints of vegetation. Some siderite and some carbonaceous shale	460	465
Gray sandstone and white limestone, some fragments of coal and of concretionary siderite.....	465	475
Gray micaceous shale, some yellow concretionary siderite, a little limestone and gray shale.....	475	480
Gray micaceous sandy shale, some yellow limestone and siderite..	480	485
Dark gray sandy micaceous shale, some gray shale, concretionary siderite and some gray sandstone.....	485	490
Dark micaceous shale.....	490	495
Dark gray micaceous shale and some siderite.....	495	500
Black limestone and some black shale, and some siderite. Crinoid stems noted.....	500	505
Black limestone, some black shale, some coal and siderite. Crinoid stems noted.....	505	510
Black limestone, some black shale, coal and siderite. A <i>Fusulina</i> lamellibranch (?) shell, <i>Aviculopecten carboniferous</i> , a minute gasteropod, and some crinoid spines and stems noted. The limestone yields bituminous and sulphurous odors when heated....	510	515
Dark limestone, some pieces impregnated with small particles of pyrite, some coal and black shale, some siderite and fragments of white limestone and calcite.....	515	520
Black limestone, a few pieces of coal, pyrite, siderite, white limestone and crinoid stems.....	520	525
Gray micaceous sandstone, some black limestone, coal and gray shale with pyrite siderite and white limestone.....	525	530
Gray micaceous sandstone.....	530	550
White micaceous sandstone with some concretionary limestone and bits of coal.....	550	555
White micaceous sandstone and coal, with some fire clay, siderite, white limestone, much pyrite, and some calcite. <i>Productus</i> , <i>Edmondia nebrascensis</i> (?), <i>Hemipronitus crassus</i> , <i>Chonetes punctatus</i> (?), some small gasteropods, several crinoid spines and stems and a bryozoan like <i>Rhombopora</i> noted.....	555	560
Gray sandstone and coal, with some white limestone, pyrites, calcite, shale and a few crinoid stems.....	560	565
Dark gray shale, some coal, sandstone, pyrite and fire clay.....	565	570
Gray micaceous sandstone, with a little fire clay and shale.....	570	575
Gray micaceous sandstone, some of which is studded with spherules of pyrite measuring from 1 to 3 mm. in diameter, and showing faces of small cubic crystals on the surface.....	575	585
Gray micaceous shale.....	585	610
Gray micaceous shale and some siderite.....	610	615
Dark gray shale.....	615	620
Gray shale and some yellow limestone, concretionary siderite in large fragments and in minute spherules, coal and some sandstone	620	625
Gray micaceous shale, a little yellow limestone, siderite, pyrite and coal.....	625	630
Gray micaceous sandstone and shale with siderite, fire clay and coal	630	635
Gray micaceous sandstone and some shale.....	635	640
Gray micaceous sandstone.....	640	645
Gray micaceous sandstone, with some siderite.....	645	650
Gray micaceous shale and some yellow limestone, and fire clay....	650	655
Dark gray shale, some fire clay and concretionary siderite.....	655	660
Dark gray micaceous shale and a little yellow limestone and siderite	660	675
Dark gray micaceous shale.....	675	680
Dark gray and some micaceous black shale, with a little siderite..	680	685
Dark shale, with imprints of vegetation, and some fire clay.....	685	690
Dark shale and concretionary siderite.....	690	695
Dark micaceous shale and some siderite.....	695	700
Dark gray micaceous shale.....	700	715
Gray micaceous shale and some sandstone.....	715	725
Gray laminated sandstone and black shale.....	725	730
Dark shale, concretionary siderite and a little sandstone.....	730	735
Hard black shale.....	735	740
Black shale, some coal and sandstone and a little siderite.....	740	745
Gray micaceous shale, some yellow limestone, some black shale and a few bits of coal.....	745	750
Black shale and a few fragments of yellow limestone and coal....	750	755
Black micaceous shale.....	755	760
Coal and a few pieces of black shale.....	760	765

Logs—Continued.

	Depth in feet.	
	From	To
Coal and black shale, some white limestone, a little sandstone siderite and bits of pyrite.....	765	770
Gray sandstone, some dark shale, bits of coal and limestone.....	770	775
Gray micaceous sandstone and a little yellow limestone.....	775	790
Dark micaceous shale and a little siderite.....	790	795
Black shale and a little coal. A little gray limestone noted.....	795	800
Black shale, a little coal and a little sandstone.....	800	805
Dark pyritiferous shale and some gray sandstone.....	805	815
Gray micaceous shale.....	815	820
Gray micaceous shale and a few bits of coal.....	820	825

No. 6.—*J. M. Drake, No. 23.*Location—NE. $\frac{1}{4}$ sec. 9, Oblong Township.

Elevation—490 feet (estimated).

	Depth in feet.	
	From	To
Gray limestone, some yellow limestone and bits of shale.....	200	205
White and yellow limestone, concretionary siderite, some gray sandstone and a piece of quartz.....	205	210
Yellow and white limestone, gray sandstone, concretionary siderite and some dark shale.....	210	215
Gray sandstone, some yellow sandstone, siderite, quartz fragments, yellow limestone and a few pieces of bright green sandstone....	215	220
Yellow limestone, some siderite, shale and sandstone and red quartz (from drift?).....	220	225
White and yellow limestone and a few pieces of dark shale.....	225	230
White limestone.....	230	250
Very fine micaceous white sand and limestone.....	250	270
Dark gray micaceous sandy shale.....	270	275
Dark micaceous shale.....	275	285
Black shale and gray sandstone, with a little limestone.....	285	290
Dark limestone, some yellow limestone and bits of coal.....	290	295
Black shale, a little yellow limestone and a few fragments of coal	295	300
Gray shale, some yellow limestone and coal.....	300	305
Gray shale and some yellow limestone.....	305	310
Gray shale.....	310	315
Gray shale and some yellow limestone.....	315	320
Gray shale.....	320	330
Gray shale and a little yellow limestone.....	330	335
Gray micaceous shale and some micaceous sandy shale.....	335	340
Gray shale.....	340	350
Concretionary siderite with a little yellow limestone and shale. A Cyathophylid coral noted.....	350	355
Gray shale and a little yellow limestone.....	355	360
Gray shale, yellow limestone and some sandstone. The shale contains shreds of vegetation.....	360	365
Gray shale and concretionary siderite.....	365	370
Gray limestone and some gray shale.....	370	375
White limestone. A crinoid stem noted.....	375	380
White limestone, some greenish sandstone and a few bits of coal..	380	385
Gray micaceous sandstone and white limestone.....	385	390
Gray shale and a little limestone.....	390	395
White limestone and some gray shale.....	395	400
Gray shale and some limestone.....	400	405
Concretionary siderite, some dark shale, bits of coal and pyrite....	405	410
Gray sandy shale and siderite. Some yellow limestone.....	410	415
Dark gray shale, some siderite and yellow limestone.....	415	420
Gray sandy shale and some siderite.....	420	425
Gray sandy shale, black shale and some siderite.....	425	435
Gray micaceous sandstone and a few bits of yellow limestone....	435	440
Gray micaceous sandstone.....	440	445
Gray micaceous sandstone with shreds of vegetation. A few small pieces of siderite.....	445	460
Gray micaceous sandstone and a few small pieces of white lime- stone.....	460	465
Gray micaceous sandstone with shreds of vegetation.....	465	470
Gray micaceous sandstone, some dark shale, a few bits of coal, and pyrite showing woody tissue.....	470	475
Gray micaceous sandstone and white limestone. A little dark shale noted.....	475	480
Gray sandy shale and yellow limestone.....	480	485
Gray sandy shale and white limestone. Some yellow limestone....	485	490
Sandstone with infiltrated lime, white limestone, and a few small spherical siderite concretions.....	490	495

Logs—Continued.

	Depth in feet.	
	From	To
Gray micaceous sandy shale, some yellowish limestone, white sandstone and a little dark shale.....	495	505
White sandstone, some dark shale and yellow limestone.....	505	515
Dark gray shale.....	515	520
Dark shale, fire clay, and some white limestone.....	520	525
Dark gray shale.....	525	530
Dark limestone, some dark shale, crinoid stems and some other organic material noted. Tuberculated-crinoid spine noted like that in S. G. McCleave well, 505-510, <i>Fusulina</i> noted.....	530	540
Dark limestone, coal, some yellow limestone and several crinoid stems noted.....	540	545
Gray micaceous sandstone and a few pieces of coal.....	545	550
Gray micaceous sandstone, a few bits of coal and siderite.....	550	555
Gray micaceous shaly sandstone, some siderite and a little limestone	555	560
Gray shale.....	560	565
Dark gray shale.....	565	570
Gray shale, some siderite and bits of pyrite.....	570	575
Gray shale and a little coal.....	575	580
Black shale and gray micaceous shale.....	580	585
Black micaceous shale and gray sandstone.....	585	590
Gray micaceous sandy and some black shale.....	590	595
Gray micaceous shale and black shale.....	595	600
Gray micaceous sandy shale and a little black shale.....	600	605
Gray micaceous sandstone and some siderite.....	605	610
Gray micaceous shale, some sandstone and siderite.....	610	615
Dark micaceous shale.....	615	620
Gray micaceous shale with shreds of vegetation.....	620	625
Gray sandy shale.....	625	635
Gray shale.....	635	640
Dark gray shale and some siderite.....	640	645
Dark gray shale, some siderite and yellow limestone.....	645	650
Dark shale, and siderite concretions.....	650	655
Dark shale, some siderite and a little white limestone.....	655	660
Gray shale.....	660	670
Gray sandstone, a few bits of pyrite and siderite.....	670	680
Gray sandstone.....	680	685
Gray sandy shale.....	685	690
Dark shale and gray sandy shale.....	690	695
Dark gray shale and some siderite.....	695	710
Dark gray shale.....	710	715
Dark shale and some siderite.....	715	725
Dark shale, and a little siderite.....	725	735
Dark shale, a little white sandstone and siderite.....	735	745
Dark shale and concretionary siderite.....	745	755
Dark shale.....	755	760
Black shale.....	760	765
Black shale and some sandstone.....	765	770
Gray micaceous sandstone and a little black shale.....	770	775
Gray shale and micaceous sandstone.....	775	780
Gray micaceous shale and little sand.....	780	785
Coal and gray shale.....	785	790
Gray shale, some fire clay, a little coal and bits of pyrite.....	790	795
Gray shale and some gray micaceous sandstone.....	795	800
Gray micaceous sandy shale and some gray shale.....	800	810
Gray micaceous shale.....	810	820
Gray sandy micaceous shale.....	820	825
Gray shale and concretionary siderite.....	825	830
Coal.....	830	835
Black carbonaceous shale and some gray shale.....	835	840
Black shale, gray sandstone and a little coal.....	840	845
White sandstone and a little white limestone.....	845	850
Dark shale and some white sandstone with infiltrated lime.....	850	860
Dark shale and some white sandstone with infiltrated lime.....	850	860
Dark shale, white sandstone, with infiltrated lime, some small		
Dark shale, white micaceous sandstone, and bits of coal.....	865	870
White micaceous sandstone.....	870	875
Dark shale and micaceous sandstone.....	875	880
Black micaceous shale, a little white limestone and a few bits		
tions.....	880	885
Gray micaceous shale.....	885	890
Hard black shale and a few pieces of white limestone.....	890	895
Gray sandstone and black shale. Small spherical siderite concretions and bits of pyrite.....	895	900
Black shale.....	900	905
Black shale and a very few pieces of white limestone.....	905	910
Black micaceous shale, white sandstone and some siderite concretions of coal.....	910	915
Black micaceous shale and a little limestone.....	915	920
White sandstone and dark shale.....	920	930

Logs—Continued.

	Depth in feet.	
	From	To
White micaceous sandstone containing carbonaceous shreds and a little black shale.....	930	935
Dark shale and some white micaceous sandstone.....	935	955
Like the preceding with a few bits of coal.....	955	960
Dark micaceous shale.....	960	965
White micaceous sandstone, some shale and a few bits of limestone.....	965	975
Gray micaceous shale, black shale and some sandstone.....	975	980
Gray shale and some sandstone.....	980	985
White micaceous sandstone and some dark shale.....	985	995
Gray micaceous sandy shale and a few pieces of white limestone..	995	1,005
Gray shale and some sandstone.....	1,005	1,010
Gray shale.....	1,010	1,020
Black shale and a little gray sandstone with infiltrated lime....	1,020	1,030
Gray micaceous shale, some grayish green pieces of shale and a few bits of limestone.....	1,030	1,045
Dark shale and a little sandstone.....	1,045	1,050
Dark shale.....	1,050	1,055
Yellow micaceous sand.....	1,055	1,060
Yellow micaceous sand and some dark shale.....	1,060	1,065

No. 7—*J. E. Wilson, No. 21.*Location—W. $\frac{1}{2}$ NW. $\frac{1}{4}$ sec. 17, T. 7 N., R. 12 W., Robinson Township.

Elevation—490 feet (estimated).

	Depth in feet.	
	From	To
Dark gray shale, fine	200	205
Gray shale, fragments of concretions and coal	205	210
Shale, sandy, micaceous, light gray	210	215
Micaceous sandstone, light gray and of fine texture.....	215	220
Gray micaceous sandy shale	220	225
Laminated, dark and light gray micaceous shale	225	230
Gray, stony shale	230	245
Black shale and some gray shale	245	250
Gray shaly sandstone with infiltrated lime	250	255
Gray sandstone and shale	255	260
Gray sandstone, some limestone	260	265
Gray sandy shale, some limestone	265	270
Gray sandy shale and concretionary siderite, some limestone....	270	275
Dark gray shale	275	280
Gray sandstone and yellowish sandstone with infiltrated lime....	280	285
Coarse white sandstone, yellow micaceous sandstone and some gray shale	285	290
Coarse white sandstone and gray shale	290	295
White sandstone, some micaceous sandstone, little dark shale and limestone	295	300
Gray micaceous sandy shale, some gray shale	300	305
Gray micaceous sandy shale	305	310
Gray micaceous shale	310	320
Gray micaceous shale, some fragments of limestone	320	325
Dark gray shale, few bits of limestone	325	330
Dark gray shale and a few fragments of limestone and siderite..	330	335
Gray shale, siderite concretion, some bits of limestone and pyrite..	335	340
Dark gray and black shale	340	345
Gray shale, limestone and siderite concretions, some quartz grains	345	350
Gray micaceous sandy shale and black micaceous shale, a few bits of limestone	350	355
Gray micaceous sandy shale	355	360
Dark gray shale	360	370
White organic limestone, brecciated, crinoid stems. Rhombopora, lepidodendroides, ethyris, (?), and fragments of other brachiopods noted. One fragment with peculiar finely reticulate structure noted	370	375
Yellowish gray limestone, organic breccia	375	380
Red shale and gray shale, with some black shale	380	385
Fire clay, some fragments, of coal and green shale.....	385	390
Greenish gray shaly sandstone	390	395
Like the preceding, with some limestone	395	400
Light gray micaceous shale	400	405
Light gray sandy shale	405	410
Dark gray stony shale	410	425
Micaceous gray sandy shale, with a few fragments of coal.....	425	430
Micaceous sandy shale and shaly sand, laminated, showing shreds of vegetation	430	435

Logs—Continued.

	Depth in feet.	
	From	To
Laminated sandstone, shaly, carbonaceous	435	440
Micaceous sandy gray shale, with bits of carbonaceous shreds...	440	445
Gray shaly sandstone with carbonaceous laminae	445	450
Dark and light sandy shale, laminated	450	460
Gray shaly sandstone, coal and some calcite from a joint in the coal	460	465
Greenish gray shaly limestone of compact texture	465	470
Sandy shale, gray and yellow limestone	470	475
Gray micaceous sandstone, with some limestone	475	480
Sandstone with concretionary impregnations of yellow limestone..	480	485
Dark, almost black, stiff shale	485	490
Black limestone, organic	490	495
Coal	495	500
Black shale, with imprints of leaves	500	505
Coal, some shale	505	510
Limestone and some micaceous shaly sandstone	510	515
Coarse white sandstone, and pyrite and some white brecciated limestone	515	520
Micaceous coarse sand	520	525
Micaceous, coarse sand, with some gray shale and limestone....	525	530
White micaceous sandstone	530	535
White micaceous sand, and some coal and limestone.....	535	540
Dark blotchy brown limestone, with chonetes, productus, <i>Fusulina</i> , Rhombopora, Fistulipora, crinoid stems, some coal and some black carbonaceous shale	540	545
Micaceous and carbonaceous gray shale	545	550
Dark blotchy limestone with crinoid joints	550	555
Coal	555	560
White sandstone, specked with minute crystals of pyrite and some dark shale	560	565
White, micaceous and pyritiferous sandstone. Some black "clod" with <i>Athyris</i> valve	565	570
No sample	570	575
Gray sandstone with concretions of siderite and limestone.....	575	580
Gray shale, with concretionary material as in preceding sample...	580	585
Dark gray shale	585	590
Dark gray shale, some sand	590	595
Black shale	595	605
Dark shale of fine texture	605	610
Black calcareous stony shale	610	615
Black shale of finest texture	615	620
Greenish gray shaly sandstone, with pyrite crystals	620	625
Greenish gray shale, sandy	625	630
Gray sandy shale and fire clay, with bituminous films in thin joints	630	635
Greenish shale, pyritiferous	635	640
Light greenish gray shale, soapstone	640	645
Gray shale and micaceous sandstone	645	650
Sandstone, gray, soft	650	655
Shaly, micaceous and laminated sandstone, and black shale.....	655	660
Dark gray sandy shale	660	670
Dark shale	670	675
Black shale	675	680
Laminated sandy shale	680	685
Greenish gray, stony shale	685	690
Black shale, with coal, considerable pyrite and frequent fragments of pyritized woody tissue	690	695
Black and gray shale, stony and sandy	695	700
Gray sandy shale	700	705
Dark shale of fine texture	705	715
Gray sandy rock, with some coal, some pyrite and minute spherical concretions of siderite	715	720
Black carbonaceous shale and coal, some dark limestone. Some pieces of coal show woody structure	720	725
Dark limestone and black shale, crinoid stems and pieces of pyrite	725	730
Black shale	730	735
Dark sandy shale, little fire clay and limestone (yellow).....	735	740
Black sandy micaceous shale	740	745
Coal, some black sandy shale, pyrite showing woody structure....	745	750
White micaceous sand, coal and some fire clay	750	755
No sample	755	760
White sand, bits of yellow limestone	760	765
Gray sandstone, some yellow limestone and black shale	765	770
Dark gray shale and limestone, some sandstone and bits of pyrite	770	775
Black shale, some dark limestone and pyrite fragments.....	775	780
Black shale, some pyrite	780	785
Dark gray shale	785	790
Gray sandy shale, few pieces of siderite concretions.....	790	795
Gray sandstone and bits of siderite	795	800
Gray sandy micaceous shale	800	805

Logs—Continued.

	Depth in feet.	
	From	To
White micaceous sandstone, gray micaceous sandy shale, little limestone and oxidized red fragments	805	810
White micaceous sandstone, some gray sandy shale, and oxidized fragments	810	815
White sandstone, some dark shale	815	825
White sandstone, some dark shale, and oxidized red material....	825	830
White micaceous sandstone, some dark shale	830	835
White sandstone	835	840
White micaceous sandstone, with a little gray shale and oxidized red material	840	845
Dark sandy shale	845	850
Black micaceous shale, with some yellow coarse grained sandstone	850	855
Yellow sandstone, coarse grained and some black shale	855	860
Gray sand, little black micaceous shale	860	870
Black micaceous shale and some gray sand	870	885

No. 8.—C. T. Cochran, No. 9.

Location—NE. corner SW. $\frac{1}{4}$ sec. 21, Montgomery Township.
Elevation—Unknown.

	Depth in feet.	
	From	To
Yellow sandstone, disintegrated	1	6
Yellow sandstone	6	12
Yellow sandstone with infiltrated lime and oxidized siderite concretions	12	19
Yellow sandstone, and sandstone concretions	19	24
Yellow sandstone, siderite concretions, and some black crinoidal limestone	24	38
Yellow sand, dark calcareous limestone and siderite concretions..	38	45
Brown coarse sandstone, dark limestone, siderite concretions, spherical, one-half inch in diameter	45	51
Gray sandstone with infiltrated lime and siderite concretions....	51	58
Gray sandstone with infiltrated lime, and siderite concretions....	58	64
Dark gray shale	64	78
Black shale	78	85
Gray micaceous sandy shale	85	91
Gray micaceous shaly sandstone	91	98
Gray shale	98	104
Gray shale, siderite, a few fragments of coal	104	111
Gray shale and siderite	111	117
Black shale	117	124
Gray sandy shale, fragments of coal	124	130
Gray micaceous shale	130	137
Fine gray laminated sandstone, black shale	137	143
Gray sandstone, black shale and brown limestone	143	150
Gray sandstone, brown limestone and black shale	150	156
Brown limestone, gray shale and gray sandstone	156	163
Gray shale, gray sandstone, and fragments of siderite concretions	163	170
Gray laminated micaceous sandstone, and siderite concretions...	170	176
Coarse gray micaceous sandstone	176	223
Coarse gray micaceous sandstone, a few pieces of coal, pyrite and siderite	223	231
Coarse gray micaceous sandstone, with infiltrated lime	231	237
Coarse gray micaceous sandstone with infiltrated lime and fragments of black shale	237	244
Coarse gray micaceous sandstone with infiltrated lime, and fragments of impure coal	244	250
Gray shaly sandstone, and concretions of brown limestone	250	257
Gray sandy shale	257	270
Greenish gray shale with infiltrated lime	270	276
Gray micaceous sandstone	276	296
Coarse gray sand	296	309
Coarse gray sand with carbonaceous folia	309	315
Coarse gray sand	315	328
Coal and fire clay, a few fragments of mottled limestone	328	335
Gray sandstone	335	341
Gray sandstone and limestone	341	348
Gray calcareous limestone	348	361
Greenish gray sandstone and gray calcareous limestone	361	367
Gray shale and calcareous limestone	367	374
Gray micaceous shale, with some gray calcareous limestone	374	380
Gray micaceous sandstone and gray shale	380	387
Gray shale	387	413
Gray sandy shale	413	419
Gray sandy micaceous shale	419	432

Logs—Concluded.

	Depth in feet.	
	From	To
Coarse gray sandstone with carbonaceous folia	432	439
Gray shale	439	445
Gray shale, micaceous	445	452
Coal, siderite concretions, pyrite crystals and a few white gypsum crystals	452	465
Gray micaceous shaly sandstone	465	471
Gray micaceous sandstone with infiltrated lime	471	478
Gray shale, gray sandstone	478	497
Coal, gray shale, dark limestone, pyrite and a few crinoid stems noted	497	504
Coal, pyrite, and a few crinoid stems noted	504	510
Coarse gray micaceous sandstone with infiltrated lime	510	523
Coarse gray micaceous sand	523	530
Gray micaceous sandy shale	530	536
Gray shale, fragments of coal and pyrite	536	543
Black shale, some limestone, and numerous crinoid stems noted ..	543	549
Gray micaceous sandstone	549	556
Dark limestone with <i>Chonetes punctatus</i> , <i>Rhombopora lepidodendroides</i> and showing some intensely green specks. Presence of <i>Fusulina</i> uncertain	556	562
Coal, some limestone	562	569
Gray sandy shale, some pyrite	569	575
Gray sandy micaceous shale	575	582
Coarse gray sand with fragments of black shale	582	588
Gray sandstone with some limestone	588	595
Gray shaly sandstone	595	608
Gray shale and sandstone	608	621
Gray shale	621	666
Black and gray shale	666	673
Black shale	673	679
Brown limestone, greenish and reddish, dolomitic, shaly limestone, and black gray shale	679	686
Gray limestone, some gray shale and fragments of brown limestone, two small gasteropods	686	692
Coal, some gray and brown limestone	692	699
Gray sandy micaceous shale	699	705
Gray shale	705	712
Gray sandy micaceous shale	712	725
Gray shale	725	731
Black shale	731	737
Black and gray shale	737	743
Black stiff shale	743	750
Coal, some gray shale	750	756
Coarse gray sandstone with infiltrated lime, fragments of coal, and gray shale	756	763
Gray sandy micaceous shale	763	769
Black shale, coarse gray sandstone, fragments of coal	769	775
Gray sandy shale, black shale	775	781
Gray micaceous shale, gray sandstone with infiltrated lime	781	787
Gray shale and gray micaceous shale	787	793
Gray shale	793	806
Black stiff shale	806	813
Coal, and fire clay	813	820
Gray shale	820	834
Gray micaceous sand and shale	834	840
Yellow micaceous sand	840	846
Gray shale	846	862
Gray shale with fragments of gray sandstone	862	873
Gray and black shale	873	884
Black shale	884	895
Gray shale	895	906
Gray sandstone with shreds of vegetation and a few fragments of coal	906	912
Gray sandstone with shreds of vegetation	912	923
Gray micaceous sandstone	923	928
White micaceous sand with fragments of shale	928	934
Gray laminated sandstone	934	940
Gray laminated sandstone, brown sandstone	940	952
Brown sandstone (note on sack "Oil 952 to 973"), gray sandstone ..	952	958
Brown sandstone, some gray sandstone	958	964
Brown sandstone, some gray sandstone, pyrite	964	970
Brown sandstone, some gray sand	970	975

STRATIGRAPHY.

Pleistocene.

The records in Plate II give an idea of the difference in thickness of the drift overlying the hard rocks. Some records show it to be thin, due

to conditions of erosion and deposition. The drift, measures from 25 to 110 feet in the examined logs; while a number of logs over the field show an average of 75 feet to the bed rock, on which the drive-pipe is set.

Pennsylvanian.

The Pennsylvanian or "Coal Measures" rocks are separable into three divisions; an upper part, the McLeansboro formation, middle part, the Carbondale formation, and a basal part, the Pottsville formation.

McLeansboro Formation—The rocks of the McLeansboro formation lie between the top of Herrin (No. 6) coal and bed rock near the surface. From measurements and estimates of logs in the section the average thickness of the formation is found to be about 485 feet. Shales and sandstones dominate in this division and are accompanied by several streaks of limestone and many coals. One well reports seven beds of coal. The most conspicuous bed of these rocks is the limestone used as a key line in the section. Dr. Udden describes it as a dark limestone containing *Fusulina* fossils. All of the records show notations of *Fusulina* except Nos. 2 and 3. The position of the bed is estimated in No. 2 by comparison with No. 1 and is thought to lie at a depth of about 560 feet. The black limestone at 490 feet in No. 3, although no *Fusulina* are reported, seems to correlate with other logs of the section and is designated as that horizon. An effort is being made by geologists to determine this bed over Illinois by its fossils and thus procure a definite marker for the Herrin (No. 6) coal immediately underneath.

The two limestones noted at 200 and 300 feet by Dr. Udden, in well No. 2, page 35; and alluded to as possibly equivalent to the limestone 160 feet above No. 6 coal at Belleville and the Carlinville limestone, suggest their possible correlations through the columnar section. The interval between the two limestones is about 130 feet. The interval between the upper or Carlinville (?) limestone and the "*Fusulina*" limestone is about 365 feet and the interval between the lower limestone and the key bed is about 220 feet. In other sections of the State, the Carlinville limestone is about 250 feet above the overlying limestone of the Herrin coal. The red shale spoken of elsewhere as lying in the McLeansboro is reported only in logs No. 4 and 7 at depths of 270 and 380 feet respectively. The intervals between the red bed and the "*Fusulina*" limestone are respectively 210 and 160 feet.

Carbondale Formation—The rocks of the Carbondale formation lie between the tops of Herrin (No. 6) and Murphysboro (No. 2) coals. The Herrin coal is the first beneath the "*Fusulina*" limestone. The Murphysboro coal lies above the Pottsville sandstones and is usually separated from these by shales or a thin limestone. The Carbondale formation is mostly shale, with sandy shales at the bottom. There are either three or four coals noted in each record. The columnar section shows much irregularity between the Herrin and the lowest coal. The thickness of the division varies from 200 to 450 feet. Logs 1, 2, 3, 7 and 8 show an average interval of 310 feet between the Herrin coal and the Pottsville. In type localities of other sections of Illinois, the interval is between 300 and 350 feet.

Pottsville Formation—The Pottsville rocks are the lowest members of the Pennsylvanian and are essentially coarse sandstones merging into sandy shales at the top and occasionally split with lenses of shale. The lower portions of the records used in the columnar section are predominantly sandstones and in position correspond with Pottsville beds. These rocks lie below the Murphysboro (No. 2) coal. The sandstone at the base of the sections is known as the Robinson sand. There are as many as four distinct lenses of this sand interbedded with shale. The upper portion of the sand rocks are oil-bearing but lower down they yield much salt water.

LAWRENCE COUNTY.

The explored rocks of Lawrence County lie in the Pennsylvanian and Mississippian series. These major divisions are overlain with unequal thicknesses of drift. The Pennsylvanian rocks are from 800 to 1,300 feet thick. This great variation in thickness is due to the unconformity at the top of the Mississippian, accentuated by preexisting structure and preglacial erosion. The Mississippian rocks are not completely penetrated but they have been well explored to a depth of 475 feet below their top.

The columnar section, Plate IIIA, is made up of logs from all sections of Lawrence county. They are plotted in order from south to north. The top of the wide-spread Ste. Genevieve limestone, known locally as the McClosky sand, is used as a key bed through the columnar section. All records are plotted with respect to this line. The section is made up of the following records, which correspond by number to those printed on Plate 3.

LOGS.

No. 1.

Operators—Snowden Bros.

Farm and well—Laughlin, No. 1.

Location—SE. $\frac{1}{4}$ sec. 32, Lukin Township.

Elevation—469 feet.

	Thickness Feet	Depth Feet
Sand and clay, yellow, soft	20	20
Slate, white	15	35
Limestone shell	3	38
Slate, white	7	45
Limestone shell	3	48
Slate, white	12	60
Sand, loose, (water)	9	69
Slate, white	66	135
Limestone shells	5	140
Shale, black	40	180
Limestone shell	2	182
Slate, black, loose	18	200
Limestone shell, white	4	204
Slate	56	260
Sand, white loose (hole full of water, 290 feet)	30	290
Limestone	21	311
Slate, black and white	89	400
Limestone shell, white	4	404
Sandy limestone, white, (water, 410 feet)	6	410
Limestone shell, white	12	422
Slate, black	5	427
Limestone shell, gray	11	438
Red rock	7	445
Slate, white	55	500
Shale and slate, black	105	605

oth
 et
 .26
 .32
 .90
 .93
 10
 30
 80
 82
 30
 72
 77
 80
 85
 40
 45
 80
 76
 86
 96
 25
 56
 80
 115
 135
 100
 104
 115
 138
 145
 140
 150
 106
 114
 114
 132
 145
 150
 175
 332
 350
 365
 370
 375
 395
 400
 420
 430
 485
 500
 512
 530
 100
 130
 152
 156
 160
 165

 165

of

et.
 To
 5
 20
 25
 35
 40

Logs—Continued.

	Thickness Feet	Depth Feet
Sandy slate, white	21	626
Limestone shell	6	632
Shale, brown	58	690
Limestone shell	3	693
Slate, white	17	710
Shale, brown, hard	20	730
Slate, white, soft	50	780
Limestone shell, white	2	782
Slate, white	48	830
Sand, white, (salt water, 830 feet)	42	872
Broken lime, black, loose	5	877
Shale, black	3	880
Limestone shell, white	5	885
Slate, black, soft	55	940
Sand, brown, bridged	5	945
Slate, white	35	980
Slate and shale, black	96	1,076
Limestone and sand, (water, 1,086 feet)	10	1,086
Shale, black	10	1,096
Limestone, white	29	1,125
Slate, black	31	1,156
Sand and broken limestone, white, soft	24	1,180
Sandy slate, white	35	1,215
Slate, white, soft	20	1,235
Sandy shale	65	1,300
Limestone, white, hard	4	1,304
Sand, white, soft	11	1,315
Sandy clay, brown	23	1,338
Limestone, white	7	1,345
Slate, black	95	1,440
Limestone, white	10	1,450
Slate, white, soft	56	1,506
Sand, brown, (show of oil, 1,506 to 1,514 feet)	8	1,514
Limestone, white	100	1,614
Sand, (water) (show of oil, 1,705 to 1,732 feet)	118	1,732
Limestone	13	1,745
Slate	5	1,750
Sand, (hole full of water, 1,775 feet)	25	1,775
Slate	57	1,832
Limestone	18	1,850
Slate	15	1,865
Red rock	5	1,870
Limestone shell	5	1,875
Slate	20	1,895
Limestone	5	1,900
Slate	20	1,920
Red rock	10	1,930
Slate	55	1,985
Sand, (oil show, 1,985 to 2,000 feet)	15	2,000
Shale, hard, black	12	2,012
Slate	18	2,030
Limestone	70	2,100
Slate	30	2,130
Limestone	22	2,152
Sand, (show of oil)	4	2,156
Slate	4	2,160
Limestone	5	2,165
Total depth		2,165

No. 2.

Operators—Ohio Oil Company.

Farm and well—W. H. Snyder, No. 7.

Location—SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 25, Dennison Township.

Elevation—495 feet.

(This record was compiled by Dr. J. A. Udden from an examination of well samples.)

	Depth in feet.	
	From	To
Loess	1	5
Loess, silty	5	20
Gray sandy limestone and micaceous and calcareous sand. Spherules of pyrite noted, measuring from $\frac{1}{4}$ to 1 mm. in diameter..	20	25
Micaceous gray sandstone with occasional shreds of carbonaceous material	25	35
Sandy shale.....	35	40

Logs—Continued.

	Depth in feet.	
	From	To
Gray shale.....	40	45
Gray sandstone, coal, black shale and pieces of gray limestone. There were crinoid stems, one crinoid plate from a calyx and an umbo of a small brachiopod.....	45	50
Light gray shale of fine texture. No effervescence.....	50	55
Gray calcareous and sandy rock, with much concretionary calcare- ous material. One large fragment was black concretionary limestone with imbedded minute white shells and tubes, appar- ently small gasteropods or formanifera	55	60
Shaly sandstone, some shale, white and yellow limestone of con- cretionary appearance, and some coal.....	60	65
Sandy shale of very light gray color.....	65	70
Dark gray micaceous shale.....	70	90
Dark shale and black shale, fragments of concretionary limestone, Nucula beyrichi (?) crinoid stems, tubes of Ammodiscus, and fragments of concretionary limestone.....	90	100
Black shale.....	100	105
Black shale, black calcareous "clod," occasional pieces of coal, crinoid stems, "mineral charcoal" showing woody structure, pyrite and calcite.....	105	110
Gray sandy micaceous shale.....	110	120
Gray micaceous sandstone.....	120	140
Gray sandy shale, black shale and coal, with some calcareous material	140	145
Gray sandy and micaceous shale.....	145	155
Fine gray sand.....	155	165
Fine gray shaly sand.....	165	170
Fine gray shaly sand with dark shaly laminae.....	170	175
Laminated shaly sandstone.....	175	180
Laminated gray sandy shale.....	180	185
Dark micaceous and sandy shale.....	185	195
Dark shale, micaceous.....	195	200
Sandy shale and sandstone.....	200	205
Coarse, micaceous gray sand.....	205	215
Micaceous gray shale.....	215	225
Dark shale of fine texture.....	225	230
Dark shale, black shale, some sandstone, impure coal, and frag- ments of limestone, yellow. Crinoid stems and a small gas- teropod noted.....	230	235
Fire clay, sandy shale, and concretionary yellow limestone, which is fossil-bearing. A few fragments of coal noted.....	235	240
Gray shale.....	240	245
Gray stony shale.....	245	250
Dark micaceous shale.....	250	255
Gray micaceous shale.....	255	260
Dark micaceous shale.....	260	265
Gray shaly sandstone and sandy shale.....	265	270
Gray micaceous sand of fine texture.....	270	310
Gray sand and some lumps of light fire clay or shale containing imprints of leaves.....	310	315
Clean and white micaceous sand.....	315	320
Gray micaceous sandstone.....	320	335
Light gray fire clay, coal, some sandstone, and a little limestone. Minute spherules of siderite present in the fire clay.....	335	340
Cream-white limestone of fine granular homogeneous texture, with occasional minute green specks, and occasional indistinct organic fragments	340	345
White limestone of fine uniform texture. Some fragments show a fine reticulate, clastic (?) structure. Some greenish shale and pyrite	345	350
Brownish red marly clay and limestone.....	350	355
Red marl, greenish marl, and white limestone.....	355	360
White limestone of fine uniform texture, with a few fragments of gray shaly limestone	360	365
Gray sandstone, biotitic and impregnated with irregular kernels and layers of yellow limestone.....	365	370
Some sandstone, some white limestone, yellow lime and some frag- ments of a slowly effervescing material.....	370	375
Dirty dark marl and limestone, with some fragments of bright red marl, and some black fragments.....	375	380
Gray sandstone.....	380	385
Very dark shaly sandstone, bituminous and green shale.....	385	390
Dark, almost black, sandy micaceous shale.....	390	400
Dark gray shale of fine texture.....	400	405
Gray micaceous shaly sandstone and some white limestone.....	405	410
Dark gray shale of fine texture, coal	410	415
Dark gray shale of fine texture and some white limestone.....	415	425
Gray micaceous laminated sandstone.....	425	430

Logs—Continued.

	Depth in feet.	
	From	To
Dark gray shale and some brown clay.....	430	435
Dark gray sandstone with layers of carbonate of iron.....	435	440
Dark gray micaceous shale, and dark gray sandstone with layers of carbonate of iron.....	440	445
Dark gray micaceous shale; dark gray sandstone with layers of carbonate of lime, and a few fragments of limestone.....	445	450
Dark gray shale, siderite and pyrite.....	450	455
Dark gray shale of fine texture and some siderite.....	455	460
Dark gray micaceous shale, and gray sandstone with layers of carbonate of iron.....	460	470
Dark gray shale, sandstone, and sandstone with carbonate of iron.....	470	475
Dark gray shale of fine texture and some siderite.....	475	480
Dark gray micaceous shale, and some siderite.....	480	485
Dark gray shale, dark micaceous shale, and siderite.....	485	495
Dark gray shale, white and dark limestone.....	495	500
Siderite concretions showing cracks filled with calcite, gray limestone and shale.....	500	505
Gray shaly sandstone, siderite concretions and some gray limestone.....	505	510
Gray shaly sandstone, fragments of white and gray limestone....	510	515
Gray sandy shale, siderite and fragments of gray limestone....	515	520
Dark gray shale, some greenish shale, siderite, and fragments of gray limestone.....	520	525
Dark gray micaceous shale, and some siderite.....	525	530
Dark gray shale, some greenish shale and some siderite.....	530	535
Dark shale, siderite and some brown limestone.....	535	540
Dark shale, siderite, fragments of limestone, and a part of a crinoid stem noted.....	540	545
Dark shale and fragments of limestone.....	545	560
Black shale with organic calcareous fragments. Crinoid stems and Rhombopora lepidodendroides noted. Spherules of siderite present. Spines of Productus (?).....	560	565
Black shale with organic calcareous material, limestone, fragments of gray micaceous sandstone, numerous crinoid stems noted, also siderite. Hustedis, Chonetes punctatus, Rhombopora lepidodendroides, gasteropods and crinoid stems noted, as also spines of Productus (?).....	565	570
Black shale with calcareous material, fragments of limestone and sandstone, small gasteropods, numerous crinoid stems, and spines of producti noted.....	570	575
Coal, gray shale, limestone, numerous crinoid stems and pyrite noted.....	575	580
Brownish dark limestone, gray shale, and fragments of coal. Considerable pyrite, fossil wood in fragments.....	580	585
Brownish dark limestone, gray shale, some crinoid stems and Chonetes noted.....	585	590
Gray micaceous shale, gray shale, gray limestone and brown limestone.....	590	595
Gray sandy shale, fragments of brown and gray limestone.....	595	600
Dark gray shale of a fine texture and some pyrite.....	600	605
Dark gray shale of a fine texture, some gray micaceous shale, pyrite and fragments of coal.....	605	610
Dark gray shale of a fine texture.....	610	620
Dark gray micaceous shale.....	620	625
Dark gray shale and fragments of limestone.....	625	630
Dark gray micaceous shale and some pyrite.....	630	635
Dark gray shale, fragments of coal and limestone.....	635	640
Dark gray shale, fragments of limestone and some pyrite.....	640	645
Light gray sandstone of fine texture, and fragments of black shale.....	645	650
Light gray sandstone, and some fragments of black shale.....	650	660
Dark gray shale and light gray sandstone.....	660	665
Light gray micaceous fine sand.....	665	680
Fine white micaceous sand with infiltrated lime.....	680	685
Fine white micaceous sand and some dark gray shale.....	685	695
Fine gray micaceous sand with infiltrated lime.....	695	700
Dark gray shale and gray sandstone.....	700	705
Gray micaceous laminated sandstone.....	705	710
Coal, some gray shale, and a few fragments of limestone.....	710	715
Gray micaceous laminated sandstone and some coal.....	715	720
Micaceous sandstone.....	720	725
Dark gray shale.....	725	730
Black shale of fine texture.....	730	735
Very dark stony shale of fine texture.....	735	740
Gray micaceous sandstone, some black shale and fragments of white limestone.....	740	745
Gray micaceous sandstone, soft and containing calcareous material.....	745	750

Logs—Continued.

	Depth in feet.	
	From	To
Micaceous sandstone.....	750	755
Dark shale, sandstone, coal, with some limestone fragments.....	755	760
Fire clay, black shale, coal, sandstone, a few fragments of limestone, yellow siderite, spherical concretions, measuring from $\frac{1}{8}$ to 2 mm. in diameter.....	760	770
Dark shaly clay and micaceous clay, with coal, sandstone, and small spherical concretions of siderite.....	770	775
Dark clayey shale and some micaceous and sandy shale.....	775	780
Gray clayey shale of fine texture with some stony and micaceous shale.....	780	790
Dark gray shale, in part sandy, in part of fine texture. Much pyrite, some pyritized wood coal and "mineral charcoal".....	790	795
Light gray shale or fire clay.....	795	800
Light gray fire clay, white sandstone, coal and some fragments of white and yellow limestone.....	800	805
Gray clay shale or fire clay, coal, and white sandstone.....	805	810
Fire clay, sandy gray shale, black shale, coal and brown siderite..	810	815
Soft gray micaceous sandstone, with thin carbonaceous laminae black shale, brown siderite, pyrite and some fragments of fissured white limestone.....	815	820
Black shale containing calcareous organic fragments, and gray sandstone containing thin layers of shaly material, pyrite and spherules of gray lime measuring about $\frac{1}{2}$ mm. in diameter....	820	825
Dark shale and greenish gray sandy fire clay.....	825	830
Gray micaceous sandstone, fire clay and black shale with white limestone. Crinoid stems noted.....	830	840
Black shale and gray micaceous sandstone, brown siderite and white limestone and partly pyritized mineral charcoal.....	840	845
Gray micaceous sandstone, laminated, gray marly shale.....	845	850
Laminated dark shale and sandstone, with a few fragments of coal, apparently from thin seam in rock.....	850	855
Gray sandstone and sandy shale, with black shale, impure coal and siderite.....	855	860
Like the preceding but with some pure coal.....	860	865
Gray shale, fire clay, gray sandstone, and coaly black shale.....	865	870
Fire clay, gray shale, coal, brown siderite, white limestone, fragments of shells and crinoid stems, pyrite giving an oily film on the water when washed.....	870	875
Gray clayey shale, and coal, with some calcareous material.....	875	880
Like the preceding. Crinoid joints noted.....	880	885
Gray clayey shale, containing fragments of coal and of limestone, and also some mica.....	885	900
Mostly fire clay, greenish gray, some gray sandstone, black shale, a little coal, and much pyrite. Fragments of shells and of limestone noted. In the fire clay a joint was filled with a thin film of black bituminous or carbonaceous material.....	900	905
Gray laminated micaceous sandstone.....	905	915
Dark gray, sandy and micaceous shale.....	915	920
Gray micaceous sandstone and dark shale.....	920	925
Gray sandstone, greenish fire clay and coaly black laminated shale.....	925	930
Gray laminated sandstone, black shale, some pieces of acereous shale, brown siderite, fragments of white limestone.....	930	935
Sandstone, from dark to light gray, and showing streaks of carbonaceous material, together with black coaly shale.....	935	940
Greenish gray fire clay, containing spherules of fire clay from $\frac{1}{4}$ to $\frac{1}{2}$ mm. in diameter, and having thin joints filled with bituminous or carbonaceous material. Some sandstone and shale noted.....	940	945
Greenish gray fire clay, with fractures.....	945	950
Dark shale of fine texture.....	950	955
Gray coarse sand with a faint odor of petroleum. It floats on water.....	955	960
Black and dark shale, with some carbonaceous layers.....	960	965
Dark and black shale and concretionary siderite and white limestone.....	965	970
Minutely black and light gray limestone.....	970	975
Minutely blotched dark gray limestone and some dark shale.....	975	980
Dark clayey shale.....	980	990
Black shale and gray sandstone.....	990	995
Black coaly shale with brownish streak and containing streaks of brown flaky siderite, greenish gray fire clay, gray limestone and stony fire clay filled with minute spherules of siderite.....	995	1,000
Black and gray shale and a fragment of coal.....	1,000	1,005
Coarse quartz sandstone with fragments of siderite.....	1,005	1,010
Gray sandstone with siderite grains.....	1,010	1,015
Gray sandstone with many grains of brown siderite.....	1,015	1,020
Fairly coarse gray sand.....	1,020	1,030
Fine gray sand having the odor of petroleum.....	1,030	1,035

Logs—Continued.

	Depth in feet.	
	From	To
Fine gray and with some black and gray shale, white limestone, some yellow and brown siderite.....	1,035	1,040
Gray sandstone, some coarse with black and brown grains, some laminated, alternating with black micaceous shale.....	1,040	1,045
Black shale, some sandstone, and some white limestone.....	1,045	1,050
Black stiff shale, some clayey shale and white limestone.....	1,050	1,060
Black shale and fire clay with a few fragments of coal.....	1,060	1,065
Black shale, and some white limestone.....	1,065	1,075
Black shale, some pyrite and white limestone.....	1,075	1,080
Black shale and some pyrite.....	1,080	1,085
Gray sandstone with imbedded siderite spherules and shreds of carbonaceous material.....	1,085	1,090
Gray sandstone of fine texture.....	1,090	1,100
Gray sandstone of fine texture with some dark gray shale.....	1,100	1,105
Gray sandstone of fine texture.....	1,105	1,110
Gray sandstone with some fragments of white limestone.....	1,110	1,115
Laminated shaly sandstone, consisting of layers of dark sandy shale and light gray sandstone.....	1,115	1,120
Laminated sandstone and shale.....	1,120	1,130
Green and black fire clay of fine texture and cut by joints.....	1,130	1,140
Greenish blotchy very dark fire clay, with siderite concretions in large fragments, and some very red clay lumps with green core	1,140	1,145
Very dark, almost black, fire clay.....	1,145	1,150
Very dark, almost black, fire clay, or a greenish tinge, some bright red clay showing green streaks, some white limestone and some coal or bituminous substance.....	1,150	1,155
Very dark fire clay.....	1,155	1,160
Dark fire-clay-like shale.....	1,160	1,165
Black stiff shale and fragments of siderite concretions.....	1,165	1,170
Black shale and dark green shale.....	1,170	1,185
Black shale and gray shale, with some white sandstone and fragments of siderite concretions.....	1,185	1,190
Black shale.....	1,190	1,195
Black shale with some fragments of siderite.....	1,195	1,200
Dark gray shale of fine clay-like texture.....	1,200	1,205
Laminated white and black sandstone. The laminae are thin....	1,205	1,215
Dark shale.....	1,215	1,220
Dark shale with some sandstone.....	1,220	1,225
Dark shale.....	1,225	1,235
Dark sandy shale and laminated sandstone.....	1,235	1,240
Dark shale.....	1,240	1,245
Dark sandy shale and white, fine-grained sandstone, apparently in laminae. Also some fragments of white limestone.....	1,245	1,255
Gray shale, greenish fire clay, some coal and a little nodular limestone.....	1,255	1,260
Gray shale and dark shale, some yellow siderite, some white limestone and a few fragments of coal. Bituminous joints....	1,260	1,270
Gray shale, black shale, white sandstone of fine texture and white limestone.....	1,270	1,280
Gray shale, considerable white limestone, and white sandstone of fine compact texture.....	1,280	1,285
Black shale and white fine-grained sandstone with some limestone	1,285	1,290
Fine-grained, hard white sandstone, gray, sandy shale and white limestone.....	1,290	1,295
Micaceous gray sandstone, black shale, and some pieces of white limestone.....	1,295	1,300
Dark gray shale, white fine-grained sandstone, and some fragments of white limestone.....	1,300	1,305
Light gray micaceous sandstone, gray shale and some fragments of white limestone.....	1,305	1,310
Dark gray shale, laminated sandstone and some limestone.....	1,310	1,315
White, fine-grained sandstone, gray shale, white limestone and some pyrite.....	1,315	1,320
Sand, fairly coarse.....	1,320	1,325
Yellow rusty sand.....	1,325	1,340
Yellow rusty sand with some shale.....	1,340	1,345
Laminated gray sandstone of fine texture.....	1,345	1,355
Fine sand, with some shale and calcareous material.....	1,355	1,360
Fine sand and shale, with some carbonate of lime.....	1,360	1,365
Fine sand and shale.....	1,365	1,370
Dark gray shale and sand.....	1,370	1,380
Sand, gray shale and black shale.....	1,380	1,405
Greenish gray fire clay, some dark shale, considerable pyrite, and sand (from above).....	1,405	1,410
Greenish gray fire clay, much pyrite, a few fragments of rock containing organic calcareous fragments and some sand.....	1,410	1,415
Dark greenish gray shale, some fragments of black shale and pyrite.....	1,415	1,420

Logs—Continued.

	Depth in feet.	
	From	To
Sand of fine texture and dark greenish gray shale or fire clay with much pyrite.....	1,420	1,425
Dark green fire clay or shale, very much pyrite and fragments of coal, evidently from a thin seam.....	1,425	1,430
Dark greenish gray fire clay, pyrite and fragments of impure coal.....	1,430	1,435
Dark green fire clay and dark shale with some coal.....	1,435	1,440
Very dark shale, thin splitting and dark green fire clay.....	1,440	1,445
Very dark shale, dark green fire clay, a little coal and pyrite....	1,445	1,470
Dark green fire clay and dark shale, pyritiferous.....	1,470	1,480
Dark green fire clay-like shale.....	1,480	1,495
Dark green fire clay-like shale, with much pyrite, and some coal in thin seams.....	1,495	1,500
Dark green fire clay-like shale.....	1,500	1,510
Dark green fire clay-like shale, some black bituminous shale with thin laminae of coal, and with pyrite.....	1,510	1,515
Dark green fire clay-like shale, dark gray shale, "Coal Measure"-like, with pyrites.....	1,515	1,520
Dark green fire clay-like shale, and dark gray shale with pyrite..	1,520	1,535
Brownish red marl, some fire clay-like greenish shale, some pyrite and some fragments of white limestone. The red marl and the limestone have the aspect of the Chester.....	1,535	1,540
Brownish red shale, pyrite and fragments of white limestone....	1,540	1,545
Red marly shale, gray marly shale and white limestone.....	1,545	1,565
Dark gray shale and marl.....	1,565	1,570
Dark gray stony marl and fragments of white limestone, with crinoid stems.....	1,570	1,590
Gray marl and red marly shale with fragments of white limestone	1,590	1,595
Gray, green and red shale, white limestone, sandy limestone, pyrite and crinoid stems.....	1,595	1,615
Greenish gray calcareous shale.....	1,615	1,635
Dark green, stony calcareous shale.....	1,635	1,640
Dark gray shale, organic, fragmental limestone, dirty specked gray.....	1,640	1,645
Shale and limestone.....	1,645	1,650
Gray marly shale and organic fragmental limestone Oily.....	1,650	1,655
Organic fragmental limestone and some shale. Oily.....	1,655	1,660
Dark gray shale, green shale, red shale and organic fragmental limestone. Oily.....	1,660	1,665
Like the preceding with less limestone.....	1,665	1,680
Red marly shale and green laminated shale.....	1,680	1,685
Red marly shale and dark green shale.....	1,685	1,695
Gray marly shale, gray sandstone of fine texture and some organic fragmental limestone.....	1,695	1,700
Gray marly shale.....	1,700	1,730
Fine gray quartz sand showing a few mica scales (and effervescing).....	1,730	1,775
Fine-textured gray sand with some shale.....	1,755	1,760
Fine-textured gray sand with some gray shale.....	1,760	1,765
Gray marly shale and sand.....	1,765	1,775
Fine-textured gray sand, dark gray shale, with some fragments of limestone showing joints filled with black bituminous films..	1,775	1,780
Gray marly shale and fine sand.....	1,780	1,785
Earthy black marly shale filled with bitumen.....	1,785	1,795
Partly like the preceding, partly gray stony marl.....	1,795	1,800
Gray marly shale and fine sand.....	1,800	1,805
Like the preceding with some very thin-splitting black shale....	1,805	1,810
Black shale and fine gray sand.....	1,810	1,820
Gray marly shale, and some black bituminous material shining on conchoidally fractured surfaces. Fractures and fuses in flame..	1,820	1,825
Gray marly shale.....	1,825	1,830
Gray marly shale, with a black bitumen showing conchoidal, shiny cleavage.....	1,830	1,835
Gray marly shale with a few small fragments of bitumen.....	1,835	1,840
Gray marly shale.....	1,840	1,850
Gray marly shale, with some fine micaceous sand, and showing black streaks.....	1,850	1,860
Gray marly shale.....	1,860	1,865
Almost black and dark, greenish gray, marly, sandy shale, showing red streaks, and a dark greenish sand of fine texture. Mica noted. Oily.....	1,865	1,880
Dark, greenish gray fire clay-like shale. Oily.....	1,880	1,885
Dark greenish-gray shale and sandy rock, and some red shale appearing earthy, from bitumen.....	1,885	1,890
Green and red shale, with some fragments of sandstone and some organic limestone. Oily.....	1,890	1,910
Oolitic limestone, and green shale.....	1,910	1,915
Oolitic limestone, other limestone, green shale and some red shale. A small Dielasma noted. The dark green shale splits into very thin fragments.....	1,915	1,920

Logs—Continued.

	Depth in feet.	
	From	To
Green shale, dark shale, red shale, and oolitic limestone.....	1,920	1,930
Green shale, red shale, and some dirty looking limestone and oolite. Crinoid stem noted.....	1,930	1,945
Mostly iron rust from bit or casing.....	1,945	1,950
Limestone with a great deal of rust.....	1,950	1,955
Granular limestone with some well-rounded quartz sand, and some oolitic grains.....	1,955	1,960
Granular limestone, gray.....	1,960	1,965
Coarse oolitic limestone, with some quartz grains.....	1,965	1,970
An organic breccia, with imbedded oolitic grains, and some quartz grains	1,970	1,980
Organic fragmental limestone, with oolitic spherules, and with a few fragments of chert.....	1,980	1,995
Limestone, fragmental, oolitic.....	1,995	2,000

No. 3

Operators—Snowden Bros.

Farm and well—H. K. Seed, No. 3.

Location—NW. $\frac{1}{4}$ sec. 29, Bridgeport Township.

Elevation—513 feet.

	Thickness Feet	Depth Feet
Soil, yellow	23	23
Slate, dark	17	40
Sand, white (12 bailers of water, 75 feet)	35	75
Slate, dark	65	140
Limestone, white	6	146
Slate, dark	90	236
Sand, white	49	277
Slate, dark	6	283
Limestone shell	5	288
Coal	6	294
Slate, dark	36	330
Limestone, light	15	345
Slate, light	63	408
Sand, light	31	439
Limestone, light	10	449
Red slate, light	6	455
Slate, light	155	610
Sand, light, hard	13	623
Slate, dark	17	640
Sand, light	15	655
Slate, dark	20	675
Limestone, dark	12	687
Slate, light	33	725
Slate, dark	57	782
Sand, light, hard	13	795
Slate, light	13	808
Coal	4	812
Slate, light	38	850
Slight, dark	12	862
Limestone, dark	4	866
Slate, dark	24	890
Sand, light (hole full of water, 905 feet)	35	925
Limestone and sand, light, hard	15	940
Slate, black, soft	20	960
Slate, light	45	1,005
Limestone, light	5	1,010
Slate	30	1,040
Sand	50	1,090
Slate	40	1,130
Sand, (hole full of water, 1,140 feet)	252	1,382
Slate, dark	2	1,384
Sandy limestone, light	41	1,425
Slate, black	2	1,427
Limestone, light	23	1,450
Sand and coal	17	1,467
Slate, dark	2	1,469
Sand and shells	1	1,470
Slate, dark	48	1,518
Sand, light, hard (water)	73	1,591
Slate, dark, soft	17	1,608
Sandy limestone, light	32	1,640
Sand, light, hard (hole full of water, 1,640 feet).....	47	1,687

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark	16	1,703
Sand, dark	22	1,725
Limestone, light	4	1,729
Red rock	5	1,734
Slate	31	1,765
Limestone	21	1,786
Slate	7	1,793
Limestone	10	1,803
Red slate	7	1,810
Sand (water, 1,823 feet)	13	1,823
Slate	10	1,833
Limestone	20	1,853
Slate	12	1,865
Sand (water, 1,872 feet)	7	1,872
Red slate	6	1,878
Slate	12	1,890
Red slate	4	1,894
Sand (water, 1,916 feet)	22	1,916
Slate	6	1,922
Sand (hole full of water, 1,947 feet)	25	1,947
Slate	33	1,980
Limestone	2	1,982
Sand (oil pay, 1,982 to 1,995 feet)	19	2,001
Total depth		2,001

No. 4.

Operators—Snowden Bros.

Farm and well—O'Donnell, No. 28.

Location—SE. $\frac{1}{4}$ sec. 17, Bridgeport Township.

Elevation—498 feet.

	Thickness Feet	Depth Feet
Sand and mud	129	129
Slate, light	31	160
Sand, white (10 bailers water, 225 feet)	165	325
Slate, dark	10	335
Limestone shell, hard	11	346
Red rock	9	355
Slate, light	120	475
Slate, dark	85	560
Slate, white	60	620
Slate, dark	100	720
Slate, black	15	735
Sand, white (4 bailers of water, 750 feet)	45	780
Slate, light	25	805
Sand, light	10	815
Slate, dark	40	855
Limestone shell	6	861
Slate, dark	60	921
Limestone shell, hard, gray	4	925
Slate, dark	37	962
Sand, white, hard (oil, 970 feet; water, 990 feet)	86	1,048
Slate, light	2	1,050
Sand, white, soft	20	1,070
Slate, light	25	1,095
Sand, white	40	1,135
Slate, dark	15	1,150
Sand, white	25	1,175
Slate, white	16	1,191
Limestone, light	12	1,203
Slate, dark	25	1,228
Slate, light	8	1,236
Slate, dark	44	1,280
Sand, dark (oil, 1,298 feet)	38	1,318
Sand, light (water, 1,360 feet)	77	1,395
Limestone, dark	15	1,410
Slate, dark	15	1,425
Sand, white	13	1,438
Slate, dark	9	1,447
Limestone, white	53	1,500
Slate, white	4	1,504
Limestone shell	2	1,506
Slate, dark	11	1,517
Slate, light	8	1,525

Logs—Continued.

	Thickness Feet	Depth Feet
Limestone, white	35	1,560
Slate, dark	25	1,585
Slate, light	8	1,593
Sand, light (show of oil, 1,600 to 1,606 feet)	32	1,625
Slate, dark	13	1,638
Sand, light	12	1,650
Slate, dark	26	1,676
Sand, light	54	1,730
Slate, dark	12	1,742
Limestone, light	15	1,757
Sand and limestone	8	1,765
Red slate	3	1,768
Limestone, light	10	1,778
Slate, dark	12	1,790
Red rock	8	1,798
Slate, light	15	1,813
Limestone (?), cavy	22	1,835
Limestone	20	1,855
Limestone, gray, hard, (show of oil, 1,860 feet)	20	1,875
Limestone, gray, soft	15	1,890
Limestone, dark, hard	333	2,223
Total depth		2,223

No. 5.

Operators—Ohio Oil Company.

Farm and well—W. B. Gray, No. 2.

Location—SW. $\frac{1}{4}$ sec. 7, Bridgeport Township.

Elevation—486 feet.

(This record was compiled by Dr. J. A. Udden from the study of well samples.)

	Depth in feet. From To	
Yellow micaceous sandstone, with some quartz pebbles.....	1	10
White micaceous sandstone, with shreds of carbonaceous matter..	10	30
White micaceous sandstone, with some fragments of siderite and pyrite	30	35
Gray sandstone, with shreds of vegetation	35	40
Gray sandy shale	40	45
Black shale and some gray micaceous sandstone	45	50
Black micaceous shale	50	55
"Clod," with numerous crinoid stems	55	60
Black shale and "clod"	60	65
Coal and "clod"	65	70
Coal, fragments of siderite concretions, limestone and some gray sandstone	70	75
Gray sandy shale	75	80
Black shale, "clod," some coal and some pure calcite.....	80	90
Dark micaceous shale and coal with calcite	90	95
Dark gray micaceous shale	95	100
Black shale, with a few crinoid joints	100	105
Black shale	105	110
Black shale with some limestone	110	115
Black shale	115	120
Hard black shale	120	130
Black shale	130	135
Black micaceous shale	135	140
Gray micaceous sand, with some black shale	140	145
Gray micaceous sandstone, with infiltrated lime, and shreds of carbonaceous matter	145	155
Gray micaceous sand	155	205
Gray sandstone, some black shale, and a little limestone.....	205	210
Black shale and gray sandstone, with a little limestone.....	210	215
Dull bluish green shale, with some yellowish limestone from concretions	215	220
Like the preceding, with fossils in the concretionary limestone...	220	225
Shale, light, green gray unctious, shale	225	240
Greenish gray micaceous shale	240	245
Light greenish gray shale, unctuous	245	250
Light greenish gray micaceous shale	250	265
Gray micaceous sandy shale	265	270
Gray, rather coarse sandstone with occasional red, pink, green and black grains	270	275
Like the preceding, all crushed	275	280
Fire clay, fragments of concretions, sandstone	280	285

Logs—Continued.

	Depth in feet.	
	From	To
Fine clay and some shreds of carbonaceous material	285	290
Greenish blue shale, with concretionary yellow limestone	290	295
Black shale, with some bits of coal	295	300
Gray micaceous sandstone, with infiltrated lime, with some black shale and coal	300	305
Gray sandstone, in part laminated, with small siderite concretions	305	310
Gray micaceous sandstone with small siderite concretions	310	315
Gray sandstone with some black shale	315	320
Dirty white limestone, and some sand. Pyrite, crinoid joints, and spine of a Productus noted	320	325
Limestone and some shale	325	330
Limestone of light color, some gray shale and pyrite. Limestone seems to be concretionary	330	335
Gray shale and black shale with yellow concretionary limestone ..	335	350
Dark gray shale and some yellow concretionary limestone	350	355
Dark gray shale with some pyrite	355	360
Dark gray shale, some white limestone and pyrite	360	365
Dark gray shale	365	380
Dark shale with some fragments of siderite concretions	380	390
Sandstone, shale and coal	390	395
Shale, with some sandstone and coal	395	400
Greenish gray shale	400	405
Olive colored shale	405	410
Laminated sandy shale	410	415
Sandy gray shale	415	420
Shale, stony, olive colored	420	425
Gray shale	425	430
Dark shale, almost black	430	435
Gray shale	435	460
Gray shale, coal and concretion fragments	460	465
Gray fire clay, coal and shale	465	470
Gray shale, and gray concretionary limestone, impure, with iron carbonate and with pyrite	470	475
Limestone, concretionary and shale	475	480
Gray shaly fire clay and concretionary limestone, effervescing slowly	480	485
Gray concretionary siderite	485	490
Gray shale, with much concretionary impure limestone or siderite ..	490	515
Gray sandy shale, and siderite	515	520
Gray micaceous shale, some coal and siderite	520	535
Gray sandstone, laminated and with minute spherules of siderite ..	535	540
Gray shale, with some sandy shale and some black shale	540	545
Dark stony shale	545	550
Dark micaceous shale with some limestone with crinoid stem	550	555
Dark gray shale	555	560
Dark micaceous shale and clod with a Productus	560	565
Gray shale	565	570
Very dark shale and "clod"	570	575
Black clay shale with "clod"	575	580
Greenish gray micaceous sandy shale	580	590
Gray micaceous shale	590	605
Greenish gray clayey shale	605	615
Black stony shale and some red clay shale	615	620
Very dark stony shale	620	625
Dark checky shale or fire clay	625	630
Dark gray micaceous shale	630	635
Dark shale or fire clay, with imprint of leaf	635	640
Dark hard shale, slightly micaceous	640	645
Gray shale, with some siderite	645	650
Gray shale	650	655
Gray shale and some gray sandstone	655	660
Hard gray shale, with a few pieces of sandstone	660	665
Hard gray shale, with a few pieces of siderite	665	670
Dark and hard shale	670	675
Dark hard shale	675	685
Coal and dark shale, with some siderite and pyrite	685	690
Coal, with some shale and some siderite	690	695
Dark shale and some siderite, coal, and pyrite, bit of shell noted ..	695	700
Gray shale and coal, with concretions of siderite, and black shale, with leaf imprints, calcareous	700	705
Gray shale, fire clay and coal, calcareous	705	710
Gray shale and fire clay calcareous	710	715
Like the preceding, with wood in pyrite	715	720
Gray clay shale, fine in texture	720	725
Black shale, sandstone, and coal	725	730
Gray sandstone and dark gray sandy shale	730	740
Gray sandstone, and shale	740	755
Black miner's slate	755	760
Dark shale, carrying much fine pyrite	760	765

Logs—Continued.

	Depth in feet.	
	From	To
Gray shale, impregnated with small pyrite crystals.....	765	770
Gray shaly sandstone and black shale	770	775
Coal, sandstone and some yellow limestone (apparently from a ledge)	775	780
Gray micaceous and sandy shale, some red clay shale	780	785
Gray shale, coaly shale and shaly coal, with gray limestone and fragments of concretionary siderite	785	790
Gray clay shale, with some concretionary fragments	790	795
Gray shale, some black shale and siderite concretions	795	800
Gray shale, some black carbonaceous shale and some fire clay...	800	805
Gray shale, some black coaly shale, a few bits of white limestone and minute concretionary spherules	805	810
Gray shale containing many minute spherules of siderite and some white limestone	810	815
Dark shale and fire clay	815	830
Dark shale, with some imprints of vegetation	830	835
Dark shale and some sandstone, with some minute spherules of siderite	835	840
Black shale and gray shale, with some sandstone, some minute spherules of siderite and a few bits of limestone	840	845
Black shale, some sandstone and some pieces of siderite.....	845	850
Gray micaceous shale	850	855
Black hard shale, with pyrite, shell of <i>Retzia</i> (?), some spicules and a few bits of white limestone	855	860
Black stony shale, with pyrite	860	865
Black shale, with pyrite and pieces of siderite	865	875
Black shale, and white fine grained sandstone, laminated with a few small pieces of very white limestone	875	880
Gray laminated sandstone and black shale	880	890
Black shale and laminated sandstone, with some grayish soft material and a few bits of white limestone	890	895
Coal, with some gray limestone	895	900
Gray sandy shale and fragments of concretionary siderite, with some coal	900	905
Black shale and gray shale, with some fragments of yellow limestone and concretionary material	905	910
Dark gray shale, with a little limestone, and some green serpentine-like shale	910	915
Dark gray shale and greenish shale with red blotches, with a few fragments of limestone	915	920
Dark gray shale and gray sandy shale	920	925
Gray sandy shale with minute crystals of pyrite	925	930
Dark gray shale and gray sandstone, with shreds of vegetation...	930	935
Dark gray shale and some sandstone	935	940
Gray shaly sandstone and sandy shale	940	945
Dark gray sandy shale, pyritiferous	945	950
Dark gray sandy shale	950	955
Gray clay shale	955	960
Gray shale and limestone. The limestone is white, and consists of rounded fragments which are invested with an oolitic incrustation	960	965
Dark and stony thin splitting shale and light sandstone.....	965	970
White and gray sandstone and dark gray shale. Sandstone occasionally with interstitial pyrite	970	975
Dark gray shale and white sandstone	975	985
Dark greenish gray shale	985	1,000
Black shale of fine texture	1,000	1,005
Dark gray shale, with siderite partly in fragments, partly as spherules	1,005	1,010
Dark gray sandstone and dark shale	1,010	1,015
Dark shaly sandstone and black shale	1,015	1,020
Black shale, with many fragments of siderite	1,020	1,025
Black shale	1,025	1,030
Black shale, and gray limestone which contains a tangle of tubes of <i>Ammodiscus</i>	1,030	1,035
Dark gray and black shale with limestone as above.....	1,035	1,040
White and gray sandstone and gray shale	1,040	1,045
White, slightly micaceous sandstone and gray shale.....	1,045	1,050
Gray laminated shaly sandstone	1,050	1,060
Gray sandstone	1,060	1,080
Laminated gray sandstone and white sandstone	1,080	1,100
Yellow sandstone	1,100	1,105
Coarse white sand	1,105	1,115
Yellow sand	1,115	1,125
Red sand	1,125	1,135
White sand, finer	1,135	1,165
Reddish sand.....	1,165	1,175
Gray sand.....	1,175	1,185

Logs—Continued.

	Depth in feet.	
	From	To
White sand.....	1,185	1,195
Black shale, with some few small fragments of red shale (?).....	1,195	1,200
Black shale and sand with pyrite.....	1,200	1,205
Gray fire clay with shreds of vegetation.....	1,205	1,210
Black clay shale, gray sand.....	1,210	1,215
Black shale, gray fire clay-like shale with shreds of vegetation and sandstone.....	1,215	1,220
Dark fire clay, shale, with shreds of vegetation with some gray sand.....	1,220	1,230
Fire clay, dark shale and sandstone.....	1,230	1,240
Gray shale and sand.....	1,240	1,245
Gray fire clay, and gray sandstone with spherules of siderite.....	1,245	1,250
Black stony shale with large fragments of pyrite and some gray compact siliceous rock.....	1,250	1,260
Black shale showing shreds of vegetation and some gray rock.....	1,260	1,280
Laminated dark and gray sandy and stony shale showing mica and shreds of vegetation, very much comminuted.....	1,280	1,345
Black shale with pyrites and some sandstone.....	1,345	1,350
Coarse sand showing secondary enlargement of grains, with some black shale.....	1,350	1,370
	Diameter of grains in mm.	Percentage of total sample.
	2-1	0
	1-1/2	5
	1/2-1/4	10
	1/4-1/8	80
	Less than 1/8	5.00
Gray sand of somewhat finer texture than the preceding.....	1,370	1,375
Gray coarse sandstone and some black shale.....	1,375	1,385
Like the preceding, but with finer sand.....	1,385	1,390
Coarse sand and some gray shale.....	1,390	1,395
Sand, white.....	1,395	1,435
	Diameter of grains in mm.	Percentage of total sample.
	2-1	0
	1-1/2	3
	1/2-1/4	6
	1/4-1/8	85
	Less than 1/8	6
White sand.....	1,435	1,455
Fine reddish sand.....	1,455	1,460
Fine gray sand.....	1,460	1,465
Fine yellow sand.....	1,465	1,480
White limestone, with some sand.....	1,480	1,485
Like the preceding, with two minute echinoid stems.....	1,485	1,490
Yellowish organic limestone.....	1,490	1,495
White limestone containing fragments of fossils and with a few fragments of chalcadonic chert and with much dark shale.....	1,495	1,500
Organic calcareous fragments with dark shale and coarse white sand.....	1,500	1,515
Dolomitic (?) limestone, with an occasional purple tint, mixed with much shale and sand.....	1,515	1,520
Yellowish sandstone, with some shale and dolomitic (?) calcareous fragments.....	1,520	1,530
Limestone, organic, fragmental gray, calcareous, with some shale and sand. Some shale is green.....	1,530	1,545
Dark gray organic fragmental limestone, with some green shale..	1,545	1,550
Like the preceding, with more shale.....	1,550	1,555
Gray and greenish shale and gray calcareous limestone, with a fragment of a fossil shell.....	1,555	1,560
Gray calcareous organic limestone and greenish shale.....	1,560	1,565
Fine gray sand and shale with pyrite.....	1,565	1,570
Gray sandstone and shale.....	1,570	1,575
Dark gray shale, gray sandstone and limestone.....	1,575	1,580
Black shale, showing a few brown blotches.....	1,580	1,585
Black shale, with green and red shale, some limestone and pyrite..	1,585	1,590
Dark gray shale, with green and some red shale and limestone.....	1,590	1,600
Like the preceding, with two thin flakes of coal and a few bits of red limestone.....	1,600	1,605
Dark gray and greenish gray shale, some white sandstone and some red shale, with some fragments of limestone.....	1,605	1,610
Like the preceding but more sandy. Pyrite.....	1,610	1,615
Gray fine sand, gray and black shale and limestone and pyrite....	1,615	1,620
Gray fine sand and dark gray shale.....	1,620	1,625
Black and greenish shale with sandstone and pyrite.....	1,625	1,630
Black shale, and gray sand.....	1,630	1,635

Logs—Continued.

	Depth in feet.	
	From	To
Black shale and gray sandy shale, with bits of red shale.....	1,635	1,640
Gray shale.....	1,640	1,645
Black shale, greenish shale and sandstone.....	1,645	1,650
Greenish gray shale and some white sand.....	1,650	1,655
Gray and green shale with sand. One fragment of bitumen noted, which burned when ignited.....	1,655	1,660
Black and gray shale and sand in about equal quantities.....	1,660	1,665
Slickensided greenish gray shale and fine sand.....	1,665	1,670
Sandstone and dark shale.....	1,670	1,675
Sandstone, dark shale and some calcareous lime.....	1,675	1,685
Gray fine sand.....	1,685	1,695
Sand and dark shale.....	1,695	1,700
White limestone, dark gray shale and sand effervescing slowly....	1,700	1,710
Fine yellow sand.....	1,710	1,715
Fine gray sand.....	1,715	1,740
Black and dark gray shale.....	1,740	1,750
Dark gray shale and some gray limestone, oolitic grains (?).....	1,750	1,760
Grayish white fine sand.....	1,760	1,765
Grayish white sand and some shale, effervescing slowly.....	1,765	1,775
Dark gray and black shale with some sand.....	1,775	1,780
Calcareous limestone with slow effervescence and dark gray and red shale oolitic grains $\frac{1}{2}$ - $\frac{1}{4}$ mm. in diameter.....	1,780	1,785
Gray calcareous limestone with bits of brachiopod shells, spines, occasional oolitic grains, and dark gray and dull red shale. Oolites frequently oval.....	1,785	1,795
Like the preceding, with more sand and more oolitic grains.....	1,795	1,800
Dark shale, some oolitic limestone.....	1,800	1,805
Dark shale, oolitic limestone and some red shale.....	1,805	1,810
Dark shale, red shale, oolitic limestone and lobster colored limestone.....	1,810	1,815
Like the preceding but with less limestone.....	1,815	1,825
Dark greenish gray shale, and dark red shale with limestone, organic.....	1,825	1,830
Like the preceding, with a few limestone fragments of "lobster" red color.....	1,830	1,835
Dark gray, gray and red shale with organic limestone, with slow effervescence.....	1,835	1,855
Oolitic limestone effervescing slowly and black and red shale.....	1,855	1,865
Oolitic white calcareous limestone.....	1,865	1,890
Gray limestone effervescing slowly.....	1,890	1,895
Fine gray sand, pure, grain, measuring about 1-6 mm. in diameter	1,895	1,900
Gray limestone, effervescing slowly with acid.....	1,900	1,905
Gray limestone, calcareous.....	1,905	1,940
Gray calcareous limestone with a few bits of chalcedonic chert....	1,940	1,945
Gray limestone, with slow effervescence, with some fragments of chert.....	1,945	1,950
Gray oolitic calcareous limestone.....	1,950	1,965
Gray oolitic limestone effervescing slowly, fragments of ribbed lamellibranch noted.....	1,965	1,970
Gray oolitic limestone, effervescing slowly.....	1,970	1,975
Gray marl.....	1,975	1,980
Gray marl and some limestone.....	1,980	1,985
Gray very finely granular dolomitic and oolitic limestone, with chalcedonic chert.....	1,985	2,000

No. 6.

Operators—Bridgeport Oil Company.

Farm and well—McPherson, No. 3.

Location—SE. $\frac{1}{4}$ sec. 11, Lawrence Township.

Elevation—429 feet.

	Thickness Feet	Depth Feet
Limestone.....	9	90
Slate.....	65	155
Sandy limestone.....	45	200
Slate.....	15	215
Coal.....	5	220
Slate.....	15	235
Limestone.....	15	250
Slate.....	150	400
Limestone.....	40	440
Slate.....	100	540
Limestone.....	8	548
Slate.....	52	600

Logs—Continued.

	Thickness Feet	Depth Feet
Limestone	5	605
Sand, (hole full of water, 625 feet)	95	700
Slate	45	745
Sand	30	775
Slate	115	890
Limestone	6	896
Slate	44	940
Sand	50	990
Slate	5	995
Sandy limestone	35	1,030
Sand (water)	30	1,060
Slate	165	1,225
Limestone	55	1,280
Sand	52	1,332
Limestone	10	1,342
Red rock	23	1,365
Slate	7	1,372
Limestone	3	1,375
Slate	35	1,410
Limestone	20	1,430
Red rock	10	1,440
Slate	20	1,460
Limestone	20	1,480
Slate	10	1,490
Red rock	15	1,505
Slate	13	1,518
Sand (first oil, 1,520 feet; best oil, 1,543 feet)	49	1,567
Limestone	23	1,590
Slate	55	1,645
Sand	15	1,660
Limestone	10	1,670
Slate	15	1,685
Limestone	77	1,762
Sand (water, 1,766 feet)	6	1,768
Total depth		1,768

No. 7.

Operators—Bridgeport Oil Company.

Farm and well—McPherson, No. 4.

Location—SW. $\frac{1}{4}$ sec. 12, Lawrence Township.

Elevation—425 feet.

	Thickness Feet	Depth Feet
Gravel and quicksand	85	85
Sand	25	110
Slate	28	138
Limestone	7	145
Slate	55	200
Sand	30	230
Limestone	5	235
Red rock	5	240
Limestone	10	250
Slate	140	390
Limestone	5	395
Coal	5	400
Limestone	40	440
Slate	90	530
Limestone	10	540
Slate	45	585
Sand (water)	90	675
Slate	15	690
Sand	35	725
Slate	65	790
Sand	15	805
Slate	65	870
Sand	10	880
Slate	20	900
Limestone	5	905
Slate	50	955
Sand (water)	45	1,000
Slate	2	1,002
Sand	63	1,065
Limestone	10	1,075

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	105	1,180
Sand	8	1,188
Limestone	2	1,190
Slate	140	1,330
Sand	20	1,350
Limestone	5	1,355
Slate	15	1,370
Limestone	89	1,459
Red rock	8	1,467
Limestone	8	1,475
Slate	34	1,509
Limestone	13	1,522
Slate	5	1,527
Sand (show of oil)	19	1,546
Slate	12	1,558
Sand (oil pay, 1,558½ feet; water, 1,563 feet)	17	1,575
Slate	25	1,600
Limestone	50	1,650
Slate	15	1,665
Limestone	5	1,670
Slate	15	1,685
Red rock	10	1,695
Slate	5	1,700
Limestone	71	1,771
Sand	4	1,775
Limestone	83	1,858
Sandy limestone	6	1,864
Limestone	122	1,986
Total depth .....	.....	1,986

No. 8.

Operators—Bridgeport Oil Company.

Farm and well—R. M. Kirkwood, No. 7.

Location—NE. ¼ sec. 14, Lawrence Township.

Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand and gravel	83	83
Limestone	10	93
Slate	32	125
Limestone	15	140
Slate	70	210
Sand (water)	25	235
Slate	10	245
Limestone	5	250
Slate	45	295
Limestone	5	300
Slate	25	325
Limestone	20	345
Slate	95	440
Sand	10	450
Slate	180	630
Sand (water)	87	717
Slate	38	755
Limestone	8	763
Slate	10	773
Sand	27	800
Limestone	20	820
Slate	40	860
Sand	20	880
Slate	20	900
Sand	20	920
Slate	40	960
Sand (water)	90	1,050
Slate	120	1,170
Sand	10	1,180
Slate	50	1,230
Limestone	6	1,236
Slate	8	1,244
Limestone	21	1,265
Slate	11	1,276
Limestone	9	1,285
Sand	85	1,370

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	30	1,400
Limestone	20	1,420
Slate	15	1,435
Limestone	30	1,465
Slate	30	1,495
Limestone	25	1,520
Red rock	15	1,535
Slate	5	1,540
Sand (oil, 1,551 feet)	40	1,580
Slate	5	1,585
Sand (water)	5	1,590
Slate	5	1,595
Sand	10	1,605
Slate	5	1,610
Limestone	20	1,630
Slate	20	1,650
Sandy limestone	25	1,675
Slate	20	1,695
Limestone	10	1,705
Red Rock	5	1,710
Limestone	57	1,767
Sand	8	1,775
Total depth		1,775

No. 9.

Operators—Snowden Bros.

Farm and well—Cummings, No. 12.

Location—NE. $\frac{1}{4}$ sec. 6, Bridgeport Township.

Elevation—516 feet.

	Thickness Feet	Depth Feet
Soil	25	25
Slate	102	127
Limestone, gray, soft	8	135
Sand, white	45	180
Slate, dark	12	192
Sand, light	80	272
Slate, dark	20	292
Limestone, light, hard	13	305
Slate, light, soft	18	323
Slate, dark	257	580
Limestone, light	9	589
Slate, dark	311	800
Limestone, light, hard	4	804
Slate and limestone shells, dark, soft	126	930
Sand, light (little oil, 940 feet)	40	970
Slate and limestone shells	15	985
Sand, light	15	1,000
Slate, light (water, 1,006 feet)	20	1,020
Slate and limestone shells	45	1,065
Slate, white	70	1,135
Sand, light, soft	15	1,150
Slate, black	15	1,165
Sand, white (water, 1,175 feet)	50	1,215
Slate, white	5	1,220
Limestone, white, soft	20	1,240
Slate, white, hard	30	1,270
Sand	5	1,275
Slate, light, soft	5	1,280
Limestone, white	14	1,294
Slate, dark	21	1,315
Limestone, gray	16	1,331
Slate, dark	14	1,345
Sand, gray (gas, 1,347 feet)	18	1,363
Slate, light	3	1,366
Limestone, white	19	1,385
Slate, dark	4	1,389
Sand, gray	7	1,396
Slate, light	19	1,415
Red slate	10	1,425
Sand, light (oil, 1,428 feet)	15	1,440
Slate, light	15	1,455

Logs—Continued.

	Thickness Feet	Depth Feet
Sand, light.....	15	1,470
Red slate.....	7	1,477
Slate and limestone shells, dark.....	33	1,510
Limestone, light.....	15	1,525
Slate, white.....	35	1,560
Sand and limestone shells, white.....	5	1,565
Slate, white.....	7	1,572
Limestone, white.....	28	1,600
Slate, white.....	25	1,625
Limestone, light.....	31	1,656
Sand (show of oil and gas, 1,656 feet).....	3	1,659
Limestone	13	1,672
Sand	3	1,675
Limestone	58	1,733
Total depth.....		1,733

No. 10.

Operators—Ohio Oil Company.

Farm and well—S. G. McCleave, No. 4.

Location—Center of section 31, Bridgeport Township.

Elevation—520 feet.

	Thickness Feet	Depth Feet
Loess	1	15
Yellow limestone and coal, some pieces of pure calcite, and numerous crinoid stems.....	15	20
Coal, yellow sandstone, some crinoidal limestone and a few pieces of calcite and red marl. Numerous crinoid stems.....	20	25
Coal, yellow sandstone, some crinoidal limestone and a few pieces of calcite and red marl. Numerous crinoid stems.....	25	30
Gray micaceous sandstone with infiltrated lime, some yellow sandstone, bits of coal and calcite.....	30	35
Coal, some yellow and white sandstone, some pieces of crinoidal limestone	35	40
Gray micaceous sandstone, some dark shale and fire clay.....	40	45
Coal. Some crinoidal limestone, a little red oxidized material. A small <i>Athyris</i> shell noted, also a piece of crinoid calyx (?)....	45	50
White micaceous sandstone, a few pieces of fire clay and coal....	50	65
Gray micaceous laminated sandstone, some fragments of yellow limestone, some coal.....	65	70
Gray micaceous sandstone, a few fragments of yellow limestone and coal.....	70	75
Yellow sandstone, crinoidal limestone, some black shale and pieces of gypsum. Two <i>Ambocoelia planoconvexa</i> and a crinoid stem noted	75	80
Black shale, some dark limestone, and a few pieces of sandstone. A crinoid stem noted.....	80	85
Gray limestone and coal, with some sandstone and shale.....	85	90
Gray micaceous shale.....	90	95
Yellow limestone, some gray sandstone, and bits of siderite.....	95	100
Yellow limestone and gray sandstone, some siderite concretions and shale.....	100	105
Gray shale and fire clay.....	105	110
Dark shale, some siderite concretions, and bits of white limestone.	110	115
Coal, some black shale, gray sandstone, a few bits of calcite and pyrite.....	115	120
Gray micaceous sandy shale, some dark shale and coal, some pieces of yellow limestone and fire clay.....	120	125
Dark shale, some coal, a few pieces of limestone.....	125	130
Dark shale, some red oxidized material, and siderite concretions..	130	135
Coal, some gray micaceous shale, and gray sandstone.....	135	140
Gray micaceous shale, some coal and fire clay.....	140	145
Gray micaceous shale and sandstone, some siderite concretions, a few bits of white limestone.....	145	150
Gray micaceous shale and a few bits of siderite concretions.....	150	155
Siderite, concretionary, some gray micaceous shale.....	155	160
Coal and gray sandstone, some concretionary siderite, some bits of limestone and pyrite. A crinoid stem noted.....	160	165
White sandstone with infiltrated lime.....	165	180
Fine gray sand with infiltrated lime.....	180	185
Fine gray micaceous sand with infiltrated lime, some gray shale	185	190
Fine gray sand with infiltrated lime.....	190	210

Logs—Continued.

	Thickness Feet	Depth Feet
White micaceous sand.....	210	225
Sand, with infiltrated lime, and some coal.....	225	230
Coal, some white limestone and black shale, some siderite.....	230	235
Gray micaceous shaly sandstone, some bits of coal, pyrite, and siderite	235	240
Yellow sand with infiltrated lime; the smaller grains float on water	240	245
Gray micaceous sandstone, some small spherules of siderite concretions, a few pieces of pyrite and white limestone.....	245	250
Gray sandstone, some siderite concretions (spherules), some dark shale, and bits of white limestone.....	250	255
Dark sandy micaceous shale, some gray sandstone, and siderite..	255	265
White sandstone.....	265	280
Gray micaceous sandstone, some pieces of laminated sandstone..	280	310
White micaceous sand.....	310	320
White limestone, indistinctly fragmental, a little sand and some gray shale.....	320	325
White limestone like the above, a little dark shale. A crinoid stem noted.....	325	330
White, indistinctly fragmental limestone. Some bits of pyrite, and a crinoid stem noted.....	330	335
Greenish compact limestone, and micaceous sandstone, with some shale	335	340
Gray shale, some sandstone.....	340	345
Gray micaceous sandy shale.....	345	350
Gray micaceous shale, some yellow limestone, and one piece containing woody fibre (?).....	350	355
Gray sandy shale, some yellow limestone, and a few siderite concretions	355	360
Gray shale, micaceous sandy shale, and some yellow limestone....	360	365
Gray sandstone, some laminated yellow sandstone, some yellow limestone, fragments of siderite.....	365	370
Gray shale and sandstone, some siderite concretions.....	370	375
Gray sandy shale, some siderite concretions. Carbonaceous shreds noted in shale.....	375	380
Siderite concretions, some sandy shale	380	385
Gray sandy shale, some concretionary siderite and bits of gray sandstone	385	390
Gray sandstone and sandy shale. A few pieces of black carbonaceous shale, coal, some sandstone with infiltrated lime, and some crinoid stems. Retzia punctulifera noted	390	395
Gray sandstone, dark shale, some white limestone, concretionary siderite. A crinoid stem and Athyris noted. A little coal noted	395	400
Gray shale and some sandstone, concretionary siderite, bits of pyrite, and a few pieces of sandstone with infiltrated lime.....	400	405
Gray sandy shale, and some concretionary siderite	405	410
White brexiated limestone, with cracks filled with yellow calcite, some yellow limestone, some siderite, a little gray shale, and sandstone with bits of pyrite	410	415
White limestone, cracks filled with yellow calcite, some concretionary siderite	415	420
White limestone, having cracks filled with yellow calcite, some yellow limestone, some gray soft shale, and a few bits of coal	420	430
White and yellow limestone, cracks filled with calcite, some gray sandstone and a few pieces of black shale	430	435
Gray shale and concretionary siderite	435	450
Dark gray shale and siderite concretions	450	475
Gray sandy shale, some gray sandstone, siderite, and a few fragments of yellow limestone	475	480
Gray sandy shale, some pieces of which have layers of siderite, yellow limestone and bits of pyrite	480	485
Gray micaceous shale, some gray sandstone, few small fragments of yellow limestone	485	490
Gray micaceous shale	490	495
Dark shale, some siderite concretions, a few pieces of white limestone and pyrite	495	500
Dark shale, some coal and concretionary siderite, and a few pieces of dark limestone. A crinoid stem noted, also some oolitic black concretionary material	500	505
Dark shale and some siderite, a few bits of white limestone, coal, and pyrite. Crinoid stem and closely tuberculated crinoid spine noted, also a spiral Ammodiscus. Rhombopora, lepidodendroids, and black shale with fucoidal traversions	505	510
Dark shale, some siderite, white limestone, fragments and bits of coal and pyrite. Crinoid stems and a small Syntrielasma hemiplicate noted	510	515
Gray micaceous shale, some gray sandstone and yellow limestone	515	520

Logs—Continued.

	Thickness Feet	Depth Feet
Gray micaceous shale, some sandstone, some pieces of yellow limestone	520	525
Gray micaceous shale	525	530
Gray micaceous shale, and some sandstone	530	535
Gray micaceous shale and some siderite	535	540
Gray micaceous shale, some siderite, and a few bits of yellow limestone	540	545
Gray sandy shale, some yellow sandstone, bits of yellow limestone and pyrite	545	550
Black shale with streaks of pyrite, some siderite concretions, and bits of white limestone	550	555
Black shale, some siderite concretions, and white limestone. Crinoid stem noted	555	560
Black shale and a few siderite concretions	560	565
Yellow concretionary limestone and black shale. Some siderite. More shale than limestone	565	570
White and yellow concretionary limestone, some dark shale and gray sandstone, bits of pure calcite, and pyrite. More shale than limestone	570	575
Black carbonaceous shale and coal, some white limestone and siderite, and some bits of pyrite	575	580
Dark shale, some pieces of yellow limestone	580	595
Dark shale, few pieces of yellow limestone and white sandstone, a few pieces of calcite	595	600
Dark micaceous shale, some yellow limestone, with layers of calcite, and some sandy shale	600	605
Gray sandy shale, some yellow limestone, bits of white sandstone and pyrite	605	610
Gray sandy shale, some pieces of dark limestone, and bits of pyrite	610	615
Dark sandy shale, some pieces of pyrite	615	620
Dark gray micaceous shale, some pieces of yellow limestone, and siderite concretions	620	625
Dark gray shale, some pieces of yellow limestone and siderite. A crinoid stem noted	625	630
Gray shale	630	635
Gray shale, a few siderite concretions, and crinoid stems	635	640
Gray sandy shale, some yellow limestone, and concretionary carbonate of iron	640	645
Gray shale, some coal and siderite	645	650
Soft gray shale, some yellow limestone, and siderite	650	655
White limestone, some "clod" and sandstone	655	660
Black "clod," some yellow limestone, and soft gray shale	660	665
"Clod," with little white limestone and crinoid stems	665	670
"Clod," crinoid stems, and Edmondia (?), with some white limestone	675	680
Gray shale, yellow limestone and some "clod"	680	685
Yellow limestone and gray sandstone, some concretionary siderite and gray shale	685	590
Soft gray shale, yellow limestone, and some sandstone	690	695
Gray micaceous sandy shale, yellow and white limestone, some "clod," and some pyrites	695	700
Gray micaceous shale, some siderite, some white limestone, and pieces of calcite, with some sandstone	700	705
Gray, sandy shale, some black shale, and siderite with a few pieces of coal	705	710
Gray sandy shale, some coal, and siderite	710	715
Gray sandstone and some black carbonaceous shale	715	720
Coal and some fire clay	720	725
Black shale	725	735
Hard black shale	735	740
Black shale, a little white sandstone	740	745
Gray sandstone, some black pyritiferous shale, and yellow limestone	745	750
Gray sandstone, bits of yellow limestone	750	755
Gray micaceous sandstone, some pieces laminated, and bits of yellow limestone	755	760
Gray shale and sandstone, some imprints of leaves in shale	760	765
Dark shale, some sandstone, laminated and micaceous, bits of yellow limestone	765	770
Gray micaceous sandstone and dark shale, some yellow limestone	770	780
Gray micaceous sandstone, some dark shale, a few bits of limestone	780	785
Gray micaceous sandstone and some dark shale	785	790
Dark gray micaceous shale, bits of yellow limestone, and siderite	790	795
Black micaceous shale	795	800
Gray shale and some black micaceous shale	800	805
Gray shale, with some imprints of vegetation	805	810
Dark micaceous shale and some pieces of yellow limestone	810	815
Dark shale, some fragments of yellow limestone	815	820

Logs—Continued.

	Thickness Feet	Depth Feet
Gray micaceous sandstone, some shale, bits of yellow limestone (small)	820	825
Gray micaceous sandstone, a little shale and limestone.....	825	835
Gray sandstone, with concretionary yellow limestone.....	835	840
Gray sandstone, some yellow limestone, and white limestone, with some pieces of dark limestone	840	845
Gray micaceous sandstone, some gray shale, and a few pieces of yellow limestone	845	850
Dark gray shale, some gray sandstone, few pieces of yellow limestone, and yellow calcite. Crinoid stems and a piece of shell noted	850	855
Black shale and a little white limestone. Crinoid stems and a piece of brachiopod shell noted	855	860
Black shale and a little yellow limestone. Piece of shell and crinoid stem noted	860	865
Black shale, few pieces of yellow and white limestone.....	865	870
Black shale, some concretionary siderite, and bits of yellow limestone	870	875
Black shale and some gray shale	875	880
Black shale, some siderite and gray sandstone	880	885
Gray micaceous sandstone and few pieces of shale.....	885	890
Gray sandstone, few pieces of yellow limestone, and dark shale..	890	895
Gray micaceous shale, some sandstone	895	900
Gray micaceous shale	900	905
Gray micaceous shale and some dark shale	905	910
Dark and gray micaceous shale	910	915
Dark gray shale and a few pieces of white limestone.....	915	920
Dark gray shale, bits of limestone, and pyrite	920	925
Black shale	925	930
Black shale and some fire clay, bits of sandstone	930	935
Gray sandstone and some dark sandy shale	935	940
Dark sandy shale and sandstone, bits of yellow limestone.....	940	945
Dark sandy shale and sandstone	945	950
Dark shale, some sandy shale	950	955
Gray micaceous shaly sandstone	955	960
Gray micaceous sandy shale and sandstone	960	970
Gray micaceous shaly sandstone, some black shale	970	975
Gray micaceous sandy shale, bits of yellow limestone.....	975	980
White micaceous sand, a little dark shale	980	985
White micaceous sand, some dark laminated shale	985	990
Gray sandstone and some dark micaceous shade. Sandstone with infiltrated lime, some pieces of laminated sandstone	990	995
White micaceous sand, some dark shale	995	1,000
White micaceous sand, little dark shale	1,000	1,005
Gray micaceous sand	1,005	1,010
Gray micaceous sandstone, some dark shale	1,010	1,015
Gray micaceous sandstone	1,015	1,025
Gray shale	1,025	1,035
Dark gray shale	1,035	1,040
White micaceous sand, grains mostly from $\frac{1}{8}$ to $\frac{1}{4}$ mm. in diameter	1,040	1,045
White micaceous sand	1,045	1,065
White micaceous sand with a little infiltrated lime	1,065	1,070
White micaceous sand with some infiltrated lime, a little dark shale	1,070	1,080
Gray micaceous sandstone and shale	1,080	1,085
White micaceous sand with some infiltrated lime	1,085	1,090
Yellow micaceous sand	1,090	1,125
Yellow sand	1,125	1,130
Yellow sand, showing secondary enlargement of grains.....	1,130	1,135
Yellow sand	1,135	1,140
Yellow sand and some dark shale	1,140	1,145
Gray sand with some secondary enlargement of crystals.....	1,145	1,150
White sand, very fine	1,150	1,155
White sand	1,155	1,160
Fine white sand	1,160	1,165
White sand and some gray shale	1,165	1,170
Fine white sand	1,170	1,175
Fine white sand with some infiltrated lime	1,175	1,180
Yellow sand	1,180	1,190
Yellow sand with infiltrated lime	1,190	1,210
White sand, grains mostly from $\frac{1}{8}$ to $\frac{1}{4}$ mm. in diameter.....	1,210	1,215
Fine white sand	1,215	1,230
White sand, some grains show secondary enlargement	1,230	1,235
White sand	1,235	1,280
Yellowish sand	1,280	1,290
Yellow sand and some white limestone	1,290	1,300
White limestone and sand	1,300	1,305
Like the preceding, but with more lime	1,305	1,310
Greenish shale with some flakes of mica, some white and dark limestone. Some imprints of leaves	1,310	1,315

Logs—Continued.

	Thickness Feet	Depth Feet
Greenish shale, or a fire clay, some limestone, and bits of pyrite.		
Imprints of vegetation	1,315	1,320
Gray sandstone, some pieces of pyrite, and greenish shale like in the preceding	1,320	1,325
Gray sandstone with some flakes of mica	1,325	1,330
A tangled organic oolitic limestone, breccia and some sandstone..	1,330	1,335
A tangle of organic oolitic limestone, effervescence, brisk. Some greenish shale and sand, bits of pyrite	1,335	1,345
A tangle organic oolitic limestone, breccia, some pieces of green and red shale	1,345	1,350
Oolitic limestone, some dark shale, bits of green and red shale and two pieces of chert	1,350	1,355
A tangled organic oolitic limestone, breccia, some black, greenish and brown shale	1,355	1,370
Black shale and limestone, like that of the preceding sample.....	1,370	1,375
Black shale and some oolitic limestone, effervescence brisk.....	1,375	1,380
Black and green shale, white limestone	1,380	1,390
Black shale and some sandstone	1,390	1,395
Black shale and a little sandstone	1,395	1,400
Greenish and red shale, some limestone, effervescence brisk. Bits of chert and pyrite	1,400	1,405
Dark shale and some reddish colored limestone, effervescence brisk	1,405	1,410
Dark and reddish brown shale, some gray limestone	1,410	1,415
Dark shale and some gray limestone, a little red shale.....	1,415	1,420
Black shale and a little limestone	1,420	1,425
Black marly shale and some white limestone. Bits of pyrite and red shale	1,425	1,435
White limestone, some black marly shale and red shale, numerous crinoid stems	1,435	1,440
Black shale, some marly shale and white limestone, crinoid stems and pieces of shells	1,440	1,445
White limestone and dark shale	1,445	1,450
White limestone and dark shale, some yellow sandstone.....	1,450	1,455
Grayish yellow sandstone with infiltrated lime, some dark shale and white limestone	1,455	1,470
Gray sandstone, some black shale	1,470	1,475
Red shale, some greenish sandstone with infiltrated lime and little gray sandstone	1,475	1,480
Dark sandy calcareous shale, some white limestone and red shale	1,480	1,485
Coarse gray sand and some black shale	1,485	1,490
Coarse gray sand	1,490	1,500
White sandstone with infiltrated lime and some dark shale.....	1,500	1,515
Gray sandstone and a little dark shale	1,515	1,535
Black shale	1,535	1,550
Black shale, some yellowish sandstone with infiltrated lime.....	1,550	1,560
Black shale and white limestone. A few fragments of shells....	1,560	1,565
Black shale and white sandstone, little limestone	1,565	1,585
Black shale, white limestone, effervescence brisk, and some sand..	1,585	1,590
Black shale and some white fragmental limestone, crinoid stem noted	1,590	1,595
Black shale	1,595	1,600
Black shale and a little limestone	1,600	1,605
Black shale and some sandstone, and white limestone.....	1,605	1,610
Gray sand, white limestone, (effervescence brisk), and a little dark shale	1,610	1,620
White limestone and dark shale	1,620	1,625
Black shale and a little limestone	1,625	1,645
Black shale and some limestone. A crinoid stem noted.....	1,645	1,650
Black shale and some limestone	1,650	1,660
Black shale	1,660	1,665
Black and red shale, some white limestone	1,665	1,670
Black shale, some red shale and oolitic limestone, (effervescence brisk)	1,670	1,680
Greenish and reddish shale, some oolitic limestone	1,680	1,685
Greenish shale, some red shale, and some oolitic limestone.....	1,685	1,690
Oolitic limestone, a little sand and greenish shale	1,690	1,710
Oolitic limestone	1,710	1,740
Oolitic limestone, little greenish shale and bits of pyrite.....	1,740	1,745

No. 11.

Operators—Snowden Bros.

Farm and well—Perkins, No. 19.

Location—SW. $\frac{1}{4}$ sec. 32, Bridgeport Township.

Elevation—529 feet.

	Thickness Feet	Depth Feet
Soil and slate	140	140
Sand	45	185

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	15	200
Sand	75	275
Slate	30	305
Limestone	10	315
Slate	20	335
Slate and shale	106	441
Sandy shale	10	451
Slate	95	536
Limestone	8	544
Slate	96	640
Limestone	5	645
Slate	70	715
Limestone	6	721
Slate	79	800
Limestone	5	805
Slate	43	848
Sandy limestone	6	854
Slate, white	10	864
Slate, brown	46	910
Sand (show of oil, 930 to 950 feet)	46	956
Slate, brown	10	966
Slate, gray	84	1,050
Sand (water, 1,075 feet)	115	1,165
Slate	40	1,205
Sandy limestone	10	1,215
Slate	15	1,230
Limestone	7	1,237
Slate	23	1,260
Red rock	10	1,270
Slate	24	1,294
Limestone	22	1,316
Slate	17	1,333
Sand	12	1,345
Limestone	22	1,367
Shale	29	1,396
Red rock	11	1,407
Sand	30	1,437
Red rock	12	1,449
Slate	43	1,491
Limestone	3	1,494
Slate	21	1,515
Sand (oil, 1,520 feet)	18	1,533
Slate	21	1,554
Limestone	13	1,567
Shale	7	1,574
Limestone	8	1,582
Slate	16	1,598
Limestone	7	1,605
Slate	11	1,616
Limestone (gas, 1,654 feet)	70	1,686
Sand (oil, 1,686 to 1,696 feet)	10	1,696
Limestone	106	1,802
Total depth .....	.....	1,802

No. 12.

Operators—Bridgeport Oil Company.

Farm and well—Willey, No. 4.

Location—SE. $\frac{1}{4}$ sec. 30, Petty Township.

Elevation—517 feet.

	Thickness Feet	Depth Feet
Mud and slate	22	22
Sand	10	32
Slate	128	160
Sand	20	180
Slate	65	245
Limestone	5	250
Slate	25	275
Limestone	10	285
Red rock	5	290
Slate	110	400
Limestone	5	405
Shale	25	430

Logs—Continued.

	Thickness Feet	Depth Feet
Coal	3	433
Shale	7	440
Limestone	5	445
Slate	155	600
Limestone	65	665
Slate, black	20	685
Sand	30	715
Slate	35	750
Salt sand	25	775
Slate	40	815
Limestone	15	830
Slate	67	897
Sand (oil, 907 feet)	35	932
Slate	18	950
Sand	6	956
Slate	8	964
Sand (oil, 972 to 983 feet)	21	985
Slate	23	1,008
Limestone and shale	34	1,042
Limestone	20	1,062
Sand (water, 1,077 feet)	33	1,095
Limestone	5	1,100
Sand (water, 1,145 to 1,195 feet)	95	1,195
Limestone	10	1,205
Slate	40	1,245
Red rock	10	1,255
Slate	7	1,262
Limestone	43	1,305
Slate	25	1,330
Sand (gas, 1,335 feet)	10	1,340
Limestone	15	1,355
Slate	33	1,388
Red rock	7	1,395
Sand (first pay, 1,411 feet; best pay, 1,416 to 1,430 feet)	50	1,445
Slate	13	1,458
Limestone	42	1,500
Sand	10	1,510
Slate	30	1,540
Limestone (gas, 1,548 feet; best gas, 1,630 to 1,635 feet)	95	1,635
Total depth .....	.....	1,635

No. 13.

Operators—Snowden Bros.

Farm and well—A. Pepple, No. 7.

Location—NW. $\frac{1}{4}$ sec. 30, Petty Township.

Elevation—430 feet.

	Thickness Feet	Depth Feet
Soil and slate	15	15
Sand, white	90	105
Slate and shells	90	195
Sand, white	25	220
Slate and shells	80	300
Limestone, gritty, hard	10	310
Slate, white	40	350
Slate and limestone shells	80	430
Sand	12	442
Slate	108	550
Sand	20	570
Shale, black	20	590
Slate	30	620
Sand, white (hole full of water, 660 feet)	85	705
Slate, white	79	784
Limestone, white	2	786
Slate, black	29	815
Sand, white (hole full of water, 895 feet)	115	930
Slate, black	45	975
Sand, dark, hard	50	1,025
Slate, black, soft	25	1,050
Sand, white, hard	32	1,082
Sandy limestone, dark, hard	33	1,115
Slate, dark	5	1,120
Sand, white (water)	53	1,173

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, black	27	1,200
Sand, white	10	1,210
Slate, black	8	1,218
Red rock	7	1,225
Slate, black	13	1,238
Limestone shells, white	10	1,248
Slate, black	12	1,260
Limestone, white	8	1,268
Slate, black	10	1,278
Red rock	6	1,284
Slate and shale	14	1,298
Limestone, white	7	1,305
Sand, white	13	1,318
Slate, black	20	1,338
Red rock	22	1,360
Sand, white (oil, 1,365 to 1,380 feet)	40	1,400
Limestone, gritty, black	5	1,405
Slate, black	25	1,430
Sand, white	10	1,440
Limestone, gray	10	1,450
Slate, white	20	1,470
Limestone, white	16	1,486
Slate, black	17	1,503
Sandy limestone, white (gas, 1,513 to 1,515 feet)	15	1,518
Sand, white	32	1,550
Sandy limestone	7	1,557
Limestone, white	5	1,562
Limestone, brown	18	1,580
Sandy limestone, white (green oil, 1,603 feet)	26	1,606
Limestone, white	13	1,619
Total depth	.....	1,619

No. 14.

Operators—Snowden Bros.

Farm and well—Vanatta, No. 2.

Location—NE. $\frac{1}{4}$ sec. 23, Petty Township.

Elevation—430 feet.

	Thickness Feet	Depth Feet
Clay and quicksand	75	75
Slate	75	150
Sand (16 bailers of water, 160 feet)	50	200
Slate	100	300
Limestone	30	330
Slate	470	800
Sand, hard (water, 850 feet)	50	850
Slate, soft	160	1,010
Sand, hard	100	1,110
Slate, soft	55	1,165
Sand, hard	225	1,390
Limestone	50	1,440
Red rock	15	1,455
Slate, soft	75	1,530
Sand, hard	35	1,565
Slate	35	1,600
Sand, hard (show of oil, 1,618 feet)	18	1,618
Slate	50	1,668
Limestone	32	1,700
Slate	40	1,740
Sand, hard (green oil)	25	1,765
Slate	68	1,830
Limestone (show of oil, 1,945 feet; hole full of water, 2,325 feet)	760	2,590
Total depth, dry well	.....	2,590

No. 15.

Operators—Snowden Bros.

Farm and well—Childress, No. 3.

Location—SW. $\frac{1}{4}$ sec. 24, Petty Township.

Elevation—440 feet.

Logs—Continued.

	Thickness Feet	Depth Feet
Quicksand	50	50
Sand, limestone, and slate	220	270
Limestone shells	15	285
Slate and limestone shells	135	420
Coal and slate	13	433
Slate and limestone shells	52	485
Slate, brown	10	495
Sandstone, white (25 bailers of water, 500 to 525 feet)	35	530
Slate, black	10	540
Slate and limestone shells, white	95	635
Coal	7	642
Slate and limestone shells	133	775
Limestone	25	800
Red rock	10	810
Slate and limestone shells	30	840
Limestone, white	10	850
Slate and limestone shells, black	130	980
Sandy limestone, white	40	1,020
Sand, white and brown (hole full of water, 1,020 to 1,065 feet) ..	275	1,295
Sandy limestone, brown	20	1,315
Slate, brown	20	1,335
Slate, sand, and shells, white	55	1,380
Limestone, white	25	1,405
Slate	15	1,420
Red rock	7	1,427
Slate and limestone shells, black	13	1,440
Sand	44	1,484
Slate	16	1,500
Red shale	8	1,508
Slate	8	1,516
Sand (small show of oil, 1,520 to 1,560 feet)	54	1,570
Slate, black	50	1,620
Limestone shells, white	5	1,625
Sandy slate, white	25	1,650
Red rock	8	1,658
Limestone, white	8	1,666
Sand, white, hard (oil)	29	1,695
Slate and limestone shells, black	37	1,732
Limestone	44	1,776
Sand (water, 1,781 feet)	7	1,783
Total depth		1,783

No. 16.

Operators—Bridgeport Oil Company.

Farm and well—Wood, No. 13.

Location—NW. $\frac{1}{4}$ sec. 20, Petty Township.

Elevation—430 feet.

	Thickness Feet	Depth Feet
Gravel and quicksand	90	90
Limestone	10	100
Sand	20	120
Slate	115	235
Limestone shells	5	240
Red rock	10	250
Slate	20	270
Sand	30	300
Slate and limestone	390	690
Salt sand	35	725
Slate and limestone	150	875
Sand, broken	30	905
Limestone and slate	95	1,000
Sand	75	1,075
Slate and limestone shells	55	1,130
Sand	100	1,230
Limestone, hard	15	1,245
Slate	25	1,270
Limestone	5	1,275
Sand	19	1,294
Limestone	4	1,298
Red rock	10	1,308
Slate	12	1,320
Limestone	5	1,325
Slate	15	1,340
Limestone	25	1,365

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	15	1,380
Sand	10	1,390
Limestone	10	1,400
Slate and broken sand	80	1,480
Limestone	10	1,490
Slate	20	1,510
Limestone	12	1,522
Slate and limestone shells	58	1,580
Red rock	2	1,582
Limestone	8	1,590
Sand (green oil)	15	1,605
Limestone	15	1,620
Slate	10	1,630
Limestone	40	1,670
Sand	12	1,682
Limestone, hard	6	1,688
Limestone, soft	10	1,698
Sand (salt water)	7	1,705
Total depth		1,705

No. 17.

Operators—Snowden Bros.

Farm and well—Vanatta, No. 1.

Location—NE. $\frac{1}{4}$ sec. 15, Petty Township.

Elevation—475 feet.

	Thickness Feet	Depth Feet
Sand, dark	10	23
Slate	400	423
Slate and limestone shells	50	473
Limestone shell, white	8	481
Red slate	12	493
Slate	125	618
Sand (little water, 633 feet)	15	633
Shell and slate	100	733
Slate	150	883
Sand, white	20	903
Shale, dark	100	1,003
Sand, white (water, 1,023 feet)	20	1,023
Slate and limestone shells, dark	72	1,095
Sand, white (water, 1,115 feet)	20	1,115
Slate, dark	77	1,192
Sand, light	18	1,210
Limestone, gray	20	1,230
Slate, white	85	1,315
Sand, white	55	1,370
Slate	60	1,430
Limestone, light	20	1,450
Slate, dark	60	1,510
Limestone, light	5	1,515
Slate, dark	5	1,520
Sand, light	76	1,596
Slate, dark	7	1,603
Limestone, light	10	1,613
Slate, dark	22	1,635
Sand, gray	13	1,648
Red slate	12	1,660
Slate, white	18	1,678
Limestone shell	7	1,685
Slate, white	3	1,688
Limestone, light	22	1,710
Slate, light	33	1,743
Limestone, light	20	1,763
Sand, white	99	1,862
Slate, dark	6	1,868
Limestone, light	5	1,873
Slate, dark	23	1,896
Limestone, light	41	1,937
Sand, white	8	1,945
Slate	13	1,958
Limestone, gray	12	1,970
Sandy limestone (water, 1,970 feet)	15	1,985
Limestone, gray	10	1,995
Slate, dark	8	2,003

Logs—Continued.

	Thickness Feet	Depth Feet
Sandy limestone, hard	17	2,020
Limestone, light, hard (water, 2,025 feet)	28	2,048
Sandy limestone, hard	20	2,068
Limestone, gray, hard	12	2,080
Sandy limestone, hard (water, 2,110 feet)	95	2,175
Limestone, gray, hard	60	2,235
Limestone, light, hard (hole full of water, 2,593 feet)	358	2,593
Limestone, dark, hard (4 bailers of water, 2,235 to 2,607 feet) ...	82	2,675
Sandy limestone, gray	40	2,715
Limestone, dark, hard	25	2,740
Limestone, gray, hard	15	2,755
Limestone, white, hard	15	2,770
Limestone, gray, medium hardness. Limestone, gray hard	166	2,936
Total depth		2,936

No. 18.

Operators—Snowden Bros.

Farm and well—Piper, No. 10.

Location—SE. $\frac{1}{4}$ sec. 2, Petty Township.

Elevation—439 feet.

	Thickness Feet	Depth Feet
Soil, dark	25	25
Gravel, light	10	35
Mud, dark	35	70
Limestone, light	8	78
Slate, light	172	250
Sand, light (water, 295 feet)	75	325
Limestone, light	7	332
Red rock	13	345
Sand, white	30	375
Slate, dark	98	453
Limestone shell, light	2	455
Slate, dark	25	480
Coal	3	483
Slate, black	57	540
Limestone, light	80	620
Sand, light (5 bailers of water, 625 feet)	20	640
Slate and limestone shells	25	665
Sand	20	685
Slate	65	750
Sand, light	25	775
Limestone, light	20	795
Red shale	5	800
Shells and slate	30	830
Slate, light	28	858
Sand, light	17	875
Slate, dark	35	910
Sand, white (water, 931 feet)	21	931
Limestone, dark	9	940
Slate, light	20	960
Sand, white	120	1,080
Slate, black	70	1,150
Sand, light	40	1,190
Slate and limestone shells	70	1,260
Sand, light	10	1,270
Slate and limestone shells	30	1,300
Slate, light	60	1,360
Limestone, light	15	1,375
Slate and shells, light	50	1,425
Limestone	20	1,445
Slate	5	1,450
Sand	25	1,475
Red rock	6	1,481
Sand, light (show of oil, 1,481 feet)	20	1,501
Slate, dark	10	1,511
Sand, dark	19	1,530
Slate, dark	20	1,550
Limestone, light	5	1,555
Slate, light	5	1,560
Limestone, light	4	1,564

Logs—Concluded.

	Thickness Feet	Depth Feet
Slate, dark	27	1,591
Sand, light	29	1,620
Slate, light	10	1,630
Limestone shells and sand	25	1,655
Limestone shells and slate	40	1,695
Limestone	13	1,708
Total depth		1,708

STRATIGRAPHY.

Pleistocene.

There is a varying thickness of glacial deposits over the Lawrence county oil fields. The drift is from 100 to 115 feet thick in the northern part of Petty township. It thins very rapidly toward the south boundary of Petty and the northern limit of Bridgeport townships, which is the area of a conspicuous uplift of the LaSalle anticline. The drift over this structure is only 20 to 40 feet thick. South of the uplift, in the lower part of Bridgeport and over the Dennison and Lawrence fields, the drift is 50 to 80 feet thick. It thickens perceptibly westward toward the Illinois basin.

Pennsylvanian.

The Pennsylvanian rocks of Lawrence county include the shallow producing sand of lower Dennison township, probably of McLeansboro age; the Bridgeport sands in the upper part of the Pottsville; and the Buchanan sand in the basal portion of the Pottsville rocks.

McLeansboro and Carbondale Formations.

It is impossible to find the top of the Herrin coal or the dividing line between the McLeansboro and Carbondale formations in this county. No *Fusulina* fossils were found by Dr. Udden in the samples of wells 2, 5 and 10. The rocks of the McLeansboro and Carbondale formations are similar to those of Crawford county. They are represented mostly by shales, numerous sandstones, and a few widely separated beds of limestone and coal. Owing to the impossibility of tracing individual horizons through the section, no correlations were attempted. A casual study of the Bridgeport sands immediately beneath the Carbondale reveals a mild uplift and shows them to be influenced by the LaSalle anticline, though much less in extent than the lower producing formations. Owing to the impossibility of wide correlation, through confusion with lower Pottsville sand beds, only local studies could be made. The sharply defined structure of the Mississippian rocks, the unconformity between the Pennsylvanian and Mississippian, and the milder folding of the Pennsylvanian beds, suggests a secondary disturbance in this region. The Pennsylvanian rocks are thinner over the major uplift of the anticline which is probably due to a preexisting fold in the Mississippian and to erosion before becoming drift covered.

Pottsville Formation—The Pottsville rocks are mostly the massive sandstones of the basal part of the Pennsylvanian. The sandstone beds

are often separated by lenses of shale and contain no limestone. Through the section they are from 290 to 600 feet thick with an average of 395 feet. They are very much thinner over the uplift of the LaSalle anticline than along less disturbed areas. The Pottsville rocks rest uncomfortably upon the Mississippian and therefore show much irregularity in thickness. Additional irregularity of the uppermost sands suggest a slight unconformity between the Pottsville and Carbondale. The Pottsville is a prominent salt water horizon over most of Illinois and the main oil fields.

Records 8, 3 and 7 of Plate II and 2, 5 and 18 of Plate IIIA, in addition to that of well Pet. Sec. 36, S. W. No. 8 presented in the A-A cross-section of Lawrence county, page 116, were assembled and plotted in Plate IIIB to show the relations of the Robinson and Bridgeport sands to each other. The logs are arranged in order from south to north and are plotted with respect to the top of the Pottsville which is the key line. The coal-bearing rocks of the McLeansboro and Carbondale lie above the line. The upper Bridgeport sands lie immediately below the line in the first four and the upper Robinson sands in the last three logs. Both the Robinson and Bridgeport lenses are portions of conspicuous sandy zones, belonging to the Pottsville.

Mississippian.

The Mississippian rocks underlie the Pennsylvanian and contain the most important oil sands. The upper portion, known as the Chester group,¹ is limited by erosion to the Tribune formation. Below the Chester in succession are the Ste. Genevieve and St. Louis formations. The Chester beds include the "Gas," Kirkwood, and Tracey sands, and the Ste. Genevieve contains the rich McClosky sand.

Tribune formation (upper portion of the Chester group)—The Tribune formation is characterized by a succession of limestones interlain with numerous strata of sand, and red shales. The top of the Chester is considered to be the first limestone underlying the Pottsville sandstones or separated from them by a stratum of shale. The top limestone varies in its depth from the surface through the region, which is attributed to pre-Pennsylvanian erosion. The uplift in southern Petty and northern Bridgeport townships exposed much of the upper portions of the Chester to effective erosion. The average thickness of the Tribune formation in this region is 365 feet with a range of 295 to 440 feet. The Chester rocks in southwestern Illinois, in comparison, are about 700 feet thick. There are two extreme thicknesses of about 440 feet in logs 14 and 15. The wells yielding these logs are some distance down the western limb of the anticline where the formations thicken as they descend into the Illinois basin.

There are usually three strata of limestone interlain with shales which are penetrated before the first distinct sand is encountered in the Chester of Lawrence county. This sand is known as the "Gas" sand and is present over the northern half of the county. The average interval between the top limestone of the Chester and the "Gas" sand in logs 11, 12, 13, 15, and 19 is 125 feet. The next sand below the "Gas" sand is

¹ By some geologists the Ste. Genevieve is also included in the Chester group.

the Kirkwood, 192 feet beneath the top of the Chester. The Kirkwood sand is the most widespread of all producing horizons in Illinois. It usually lies about the middle of the Chester beds of the main fields. This sand is often divided into two or even three lenses.

The red shales are prominent horizon markers over most of central and southern Illinois and the oil fields. These shales are usually very soft and tend to discolor the water in drilling and thus indicate their presence. Most of the complete records in Lawrence county show at least three red shales in the Chester. Two of these usually occur over the Kirkwood and one beneath. The second red bed is often found immediately over the Kirkwood sand. The highest red shale of the Chester is about 50 feet below the top limestone in the northern portion of the field but is very irregular in the southern division.

The Tracey sand is about 317 feet and the McClosky of the Ste. Genevieve is 446 feet lower than the top of the Chester rocks. The lowest wells on the western flank of the anticline (Nos. 14 and 17) show larger intervals between the top limestone of the Chester and the lower beds than other wells over the crest of the fold.

The Tracey sand probably corresponds to one of the lower sand members of the Tribune in southwestern Illinois. The formation is quite uniform in character, a moderately fine-grained, yellowish-brown sandstone, rather heavily bedded in its lower portion, becoming more thinly bedded above. Its thickness varies from 80 feet or less to 150 feet or more.

Ste. Genevieve—The Ste. Genevieve limestone underlies the Chester rocks. Stuart Weller says of the Ste. Genevieve:¹ “The Ste. Genevieve limestone has usually not been distinguished from the St. Louis, and in its lithologic characters, especially in its variability, it closely resembles the St. Louis. In it, however, oolitic beds, which are absent in the St. Louis, appear, and it is, perhaps, less cherty than the St. Louis. The main distinction is a faunal one, there being a recurrence of the types of life which were abundant in the Salem, but absent from the St. Louis Three members of the Ste. Genevieve limestone have been recognized by Ulrich,² the Fredonia member below, the Rosiclare sandstone member in the middle, and the O’Hara member, consisting of limestone and shale, at the top. It is nowhere possible to draw a sharp line between the St. Louis limestone and the base of the Fredonia but the line between the Ste. Genevieve and the superjacent Cypress sandstone is a distinct stratigraphic break marked by an erosion unconformity.

Dr. Weller has further observed that the Ste. Genevieve of western Illinois is more oolitic than the average in its lower member and is conspicuously cross-bedded. Its maximum thickness in Monroe county is 100 feet with an average of about 80 feet. He thinks it is possible that the Illinois Ste. Genevieve may represent only the Fredonia limestone of Ulrich’s interpretation.

The top of the Ste. Genevieve is used as a key line for the columnar section of Lawrence county, because of its persistence over the oil field. The records of wells and observations of oil men show this limestone

¹ Ibid. p. 26.

² Ulrich, E. O., and Smith, W. S. T. The lead, zinc and flourspar deposits of Western Kentucky. Prof. Paper U. S. Geol. Survey, No. 36, 1905, p. 38.

to be particularly soft in comparison with the underlying St. Louis limestone. It merges into the St. Louis and the only possible distinction between them in this district is one of hardness. The Ste. Genevieve has an average thickness of 85 feet over the field with a range of 56 to 120

lumnar
This
of Illi-
e basal

ven the
duced
steady
fluction
pth for
found

. Gene-
color.
embers
he St.
re 680
90 feet
ore in
No. 14,

the Kirkwood, 192 feet beneath the top of the Chester. The Kirkwood sand is the most widespread of all producing horizons in Illinois. It usually lies about the middle of the Chester beds of the main fields. This sand is often divided into two or even three lenses.

The r
and sou
very sof
their pro
at least
over the
immedia
Chester
of the fi

The T
vieve is
wells on
intervals
than oth

The T
bers of
uniform
stone, r
bedded
more.

Ste. C
rocks.
limestor
its litho
the St.

Louis, a
main di
of life v

.....
been rec
sandstor
limestor
line bet

.....
Cypress
unconf

Dr. V
Illinois
spicuous
100 feet
the Illi
Ulrich's

The
section
The rec

¹ Ibid. p
² Ulrich,
Prof. Pape

to be particularly soft in comparison with the underlying St. Louis limestone. It merges into the St. Louis and the only possible distinction between them in this district is one of hardness. The Ste. Genevieve has an average thickness of 85 feet over the field, with a range of 56 to 120 feet.

Dr. Udden studied samples from wells 2, 5, and 10 of the columnar section and makes note of oolites at the top of the Ste. Genevieve. This strongly corroborates Mr. Weller's idea that the Ste. Genevieve of Illinois and particularly this portion of the State represents the basal Fredonia.

The Ste. Genevieve contains the McClosky sand, which has proven the most prolific oil horizon in Illinois. The wells have not only produced an exceptionally large initial flow but they have maintained a steady yield. They have been instrumental in upholding the Illinois production when other sections of the field were declining. The range of depth for the productive McClosky sand is 1,550 to 1,850 feet. The oil is found 20 to 50 feet in the limestone.

St. Louis Formation—The St. Louis limestone underlies the Ste. Genevieve and is characterized by extreme hardness, and a blue-gray color. It is often very cherty. This bed, with subjacent limestone members of the Mississippian are over 900 feet thick in this locality. The St. Louis was penetrated in wells 4, 7, 9, 11, 14, and 17. There were 680 feet of St. Louis and lower members recorded in No. 14 and 890 feet in No. 17. Well No. 17 of the columnar section is the deepest bore in Lawrence county. It is 2,936 feet deep. The next deepest is No. 14, 2,590 feet.

CHAPTER II.

General Description of Features of the Main Fields.

INTRODUCTION.

It is not the object of this report to outline new prospective oil areas but to present the geological facts observed in the developed fields, that will corroborate certain laws governing the genesis and accumulation of oil and gas. Certain facts are presented showing the relation of the quantities of oil, salt water, porosity of the sand, etc., to the structural features of the sand. The structure of individual sands is plotted in detail by use of contours and cross-sections; these show the vertical amplitude of the arches.

FIELD WORK.

TOPOGRAPHIC SURVEYS OF THE AREA.

The United States Geological Survey and the State Geological Survey in coöperation, have been making topographic surveys in and near the oil fields. The Hardinville quadrangle survey was completed in 1908. It covers an area 17 miles long by $13\frac{1}{2}$ miles wide, south of the Illinois Central Railroad. The southern half of the Crawford county oil fields and the northern portion of the Lawrence county fields, namely that portion in Petty township, lie within the Hardinville area. The Sumner quadrangle adjoins the Hardinville area on the south and includes a small portion of this field in its northeast corner. The survey and topographic work was completed during the field season of 1911. The Vincennes quadrangle adjoins the Sumner area on the east and extends into Indiana. It includes a large portion of the Lawrence county fields in its northwest corner. The primary control has been made for the quadrangle but the secondary leveling and topographic work of the Illinois portion of the area are planned for the season of 1912. The levels established in the Hardinville and Sumner quadrangles serve as a basis of the work incidental to this report.

The coöperative work of both surveys has been further extended north of the Hardinville sheet, in the survey and study of over-flowed lands along North Fork of Embarrass river. This covers a narrow strip along the west side of the proposed *Moonshine* quadrangle, adjoining the Har-

dinville area in the north. The survey parallels the west side of the oil fields of Crawford county and will probably serve as a basis for future work in that area. The proposed Oilfield quadrangle is the second north of the Hardinville, and the first north of the *Moonshine* quadrangles. It is planned to survey this area soon. This will then serve as a basis for geological study of the shallow fields of Clark county.

The work of computing the altitudes of wells and tops of the various producing sands would not have been possible had not bench marks been scattered advantageously over the fields, particularly along highways. There were usually one-half dozen or more elevations painted on telegraph poles and fences along each section, which enabled the field men to run levels to the wells with a reasonable degree of accuracy and at the same time to check with other levels on adjoining roads or in other sections.

LEVELS IN THE OIL FIELDS.

The primary levels of the U. S. Geological Survey are the most important in the oil fields, as elsewhere, since they are based upon precise levels from a mean sea level and hence are of the highest order. They are usually carried in circuits and thus check upon themselves. The benches of these levels are usually the permanent iron posts planted, two in each township, and not more than six miles apart. The secondary or "flying" levels are carried from the permanent bench posts and are spread generally over local areas. The level figures are painted on fences, culverts, bridges, telephone posts, etc., in order to aid the topographer and geologist in contouring and detailed leveling.

The limit of error in primary leveling is about six inches in 100 miles circuit. There is no prescribed limit of error in secondary leveling although it usually is one foot, which can be easily adjusted between permanent bench marks.

The results of precise and primary leveling in the Hardinville and Sumner quadrangles are given as follows:¹

Hardinville quadrangle.

The elevations in the following list are based upon bench mark B³ of the Coast and Geodetic Survey at Olney, Ill., a square cut at the base of one of the columns of the north face of the court house. The elevation now accepted is 486.117 feet above mean sea level as determined by the 1907 adjustment.

The leveling was done in 1907 by Mr. Henry Bucher, levelman.

The work was done in coöperation with the State and the bench marks are stamped with the State name.

HICKORY POINT SCHOOL ALONG HIGHWAYS NORTH, TO T. 6 N., R. 14 W., NORTHEAST CORNER SECTION 10, THENCE EAST, TO T. 6 N., R. 12 W., NORTHEAST CORNER SECTION 7, THENCE NORTH, TO INDIANAPOLIS SOUTHERN RAILROAD AND EAST ALONG LATTER 2 MILES, TO ROBINSON.

	Feet.
T. 4 N., R. 14 W., 0.25 mile south of northwest corner of section 27, southeast corner of T road, on east side of road, 1.3 feet west of fence, 15 feet south of fence corner; iron post stamped "510 ADJ"	510.502

¹ Herron, W. H. Report of the Cooperative Topographic Survey of Illinois, Bull. Ill. State Geol. Survey, No. 14, 1909, pp. 31-182.

	Feet
T. 4 N., R. 14 W., southwest corner of section 3, northeast corner of crossroads, east side of road, 1.1 feet west of fence, 11 feet north of fence corner; iron post stamped "508 ADJ"	509.121
T. 5 N., R. 14 W., northeast corner of section 34, at southwest corner of crossroads, on west side of road, 1.1 feet east of fence, 7 feet south of fence corner; iron post stamped "496 ADJ"	496.574
T. 5 N., R. 14 W., southwest corner of section 15, northeast corner of crossroads, on north side of road near old rail fence, about 14 feet east of north and south fence line, on east side of north and south road (New Light Christian Church (?) is at southeast corner of crossroads; iron post stamped "457 ADJ")	457.555
T. 5 N., R. 14 W., southeast corner of section 3, northwest corner of crossroads, west side of road, 6 feet east of fence and 4 feet north of fence corner; iron post stamped "462 ADJ"	463.263
T. 6 N., R. 14 W., northeast corner of section 27, southwest corner of crossroads, west side of road, 1.2 feet east of fence, 5.6 feet south of fence corner; iron post stamped "483 ADJ"	483.969
T. 6 N., R. 14 W., 0.25 mile east of southwest corner of section 2, T road (the branch to west is very dim), outside of road at T, 1.3 feet south of fence, 15 feet east of north and south fence at fence corner (north of center of T); iron post stamped "478 ADJ"	478.367
T. 6 N., R. 13 W., northeast corner of section 7, at southwest corner of T road, on west side of road, 1.2 feet east of fence, 7.5 feet south of fence corner; iron post stamped "483 ADJ"	483.298
T. 6 N., R. 13 W., southwest corner of section 2, (crossroads) 0.75 mile south of Stoy, on small bank by pipe line, 1 foot east of fence, 76 feet north of east and west fence line on north side of east and west road; iron post stamped "475 ADJ"	476.261
T. 6 N., R. 12 W., northeast corner of section 7, T road, on south side of road opposite the Wilson Schoolhouse, 0.7 foot north of fence, 12 feet east of fence corner, on edge of lane to south; iron post stamped "581 ADJ"	531.481

FROM POINT 0.75 MILE SOUTH OF STOY SOUTH ALONG HIGHWAYS TO T. 4 N., R. 13 W. NEAR SOUTHEAST CORNER OF SECTION 29.

	Feet
T. 6 N., R. 13 W., northwest corner of section 23, T road, on bank on south side of road at T, 1.5 feet north of fence, 34.5 feet east of north and south section line fence; iron post stamped "484 ADJ"	485.269
Hardinville, section 34, T. 6 N., R. 13 W., on east side of main north and south road just north of Christian Church, 500 feet south of crossroads, 4.2 feet north of fence line between McCarty (south side) and Newman (north side), 6.8 feet west of an old fence line north in correct position; iron post stamped "510 ADJ"	510.903
T. 5 N., R. 13 W., 0.25 mile north of southwest corner of section 4, southeast corner of T road, at T, on south side of road, 0.9 feet north of fence, 39 feet east of north and south fence line, on east side of north and south road; iron post stamped "463 ADJ"	463.826
Chauncey, southwest corner of section 28, T. 5 N., R. 13 W., at northeast corner of crossroads, on east side of road, 1.2 feet west of fence, 6.6 feet north of fence corner; iron post stamped "488 ADJ"	488.708
T. 4 N., R. 13 W., 0.25 mile north of southeast corner of section 8, northwest corner of T road, north side of road between 2 walnut trees, 1.2 feet south of fence, 28 feet west of north and south fence line on west side of north and south road; iron post stamped "492 ADJ"	492.990

FROM T. 6 N., R. 12 W., NORTHEAST CORNER OF SECTION 29, ALONG HIGHWAYS
SOUTH, TO FAIRVIEW CHURCH.

	Feet.
T. 6 N., R. 12 W., quarter corner east side of section 29, T road at southwest corner, on south side of road, 1.1 feet north of fence 7 feet west of 2-foot oak tree at fence corner; iron post stamped "512 ADJ"	512.750
T. 5 N., R. 12 W., northwest corner of section 9, at southeast corner of crossroads, on east side of road, 0.8 foot west of fence, 5 feet south of fence corner; iron post stamped "523 ADJ"	523.318
T. 5 N., R. 12 W., 0.25 mile east of northwest corner of section 28, southeast corner of crossroads, 0.8 foot west of fence, 6 feet south of fence corner; iron post stamped "442 ADJ"	442.767
Westport, section 32, T. 5 N., R. 12 W., iron truss bridge over Embarrass river at southwest corner, in highest part of masonry support, 1.1 feet from east edge, 0.3 feet from south edge; aluminum tablet stamped "437 ADJ"	437.339
T. 4 N., R. 12 W., northeast corner of section 18, southwest corner of crossroads, south side of road, 1.3 feet north of fence, 22 feet west of north and south fence line on west side of north and south road; iron post stamped "436 ADJ"	436.534
T. 4 N., R. 12 W., northwest corner of section 29, at crossroads, on south side of road at T, 2.1 feet north of fence line, 23 feet east of north and south fence line at fence corner; iron post stamped "455 ADJ"	455.678

Sumner quadrangle.

The leveling was done mostly by H. G. Lowe and in part by H. Bucher in 1907.

FROM POINT 4 MILES EAST OF OLNEY EAST ALONG BALTIMORE AND OHIO SOUTHWESTERN RAILROAD, TO CLAREMONT, THENCE ALONG HIGHWAYS NORTH, TO HICKORY POINT SCHOOL.

(Mean of Direct and Reverse Leveling.)

	Feet.
Claremont station, 0.36 mile west of, south end of small artificial lake, in top of east wing of masonry dam, 0.9 foot from west edge and 1.8 feet from north edge, in northwest corner; aluminum tablet stamped "498 ADJ"	498.826
Claremont, at station crossing; top of south rail	509.8

FROM CROSSROADS 0.93 MILE NORTH OF CLAREMONT EAST ALONG HIGHWAY TO T ROAD 0.25 MILE EAST OF NORTHEAST CORNER SECTION 5, T. 3 N., R. 13 W., THENCE NORTH 1 MILE.

	Feet.
T. 4 N., R. 14 W., southwest corner of section 36, at northeast corner of crossroads, on east side of road, 0.7 foot west of fence, 22 feet north of fence corner; iron post stamped "509 ADJ"	510.263
T. 3 N., R. 13 W., 0.25 mile east of northwest corner of section 4, at T road, 0.7 foot north of fence, 24.5 feet east of telegraph pole, about 11 feet east of center line of north and south road; iron post stamped "483 ADJ"	484.085
T. 4 N., R. 13 W., 0.25 mile east of northwest corner of section 33, at T road, on west side of road, 2.2 feet east of fence, in concrete post flush with ground; aluminum tablet stamped "Prim. Trav. Sta. No. 10, 489 ADJ"	490.408

FROM T. 3 N., R. 13 W., SEC. 5, 0.25 MILE EAST OF NORTHEAST CORNER, EAST TO T. 4 N., R. 12 W., NORTHEAST CORNER SECTION 32, THENCE NORTH, TO FAIRVIEW CHURCH.

	Feet.
T. 4 N., R. 13 W., southwest corner of section 36, opposite U. B. Union Chapel, at northeast corner of crossroads, on east side of road, 1.1 feet west of fence, 62 feet north of fence; iron post stamped "570 ADJ"	571.168
T. 3 N., R. 12 W., northwest corner of section 4, at crossroads, State road east to west, on south side of road, on bank a little east of center of road to north, 0.9 foot north of fence, 18.5 feet east of telegraph pole; iron post stamped "457 ADJ"	457.461

FROM POINT 2 MILES NORTH OF BRIDGEPORT SOUTH, TO GRANT SCHOOL, THENCE WEST 5.6 MILES, THENCE NORTH, TO SUMNER.

	Feet.
Bridgeport, 100 feet north of railroad, on front face of southeast corner of yellow brick building owned by F. W. Cox, about 3 feet above sidewalk; aluminum tablet stamped "449 1908"	448.591
T. 3 N., R. 12 W., corner of sections 20, 21, 28 and 29, at northwest corner of crossroads; iron post stamped "489 1908"	489.774
Grant School, corner of sections 4, 5, 8 and 9, T. 2 N., R. 12 W., at northwest corner of crossroads, in southeast corner of school yard, iron post stamped "446 1908"	446.892
T. 2 N., R. 13 W., quarter corner between sections 4 and 9, at southwest corner of crossroads, 3 feet west of corner of John White's yard; iron post stamped "476 1908"	477.274
Sumner, on Main street, 250 feet south of railroad, at northeast corner of street crossing in brick building owned by Mart Wagner, in south face on foot from southwest corner and 3 feet above ground; aluminum tablet stamped "461 ILLINOIS 1908"	462.148
Sumner, railroad crossing on Main street; top of rail	460.5

FROM POINT 5.6 MILES WEST OF GRANT SCHOOL WEST, TO BROWNSVILLE, THENCE NORTH, TO CLAREMONT.

	Feet.
T. 2 N., Rs. 13 and 14 W., corner of sections 1, 6, 7 and 12, Lawrence-Richland county line, at northwest corner of crossroads, in root of tree; spike	537.90
Preston School, corner sections 3, 4, 9 and 10, T. 2 N., R. 14 W., in front of T road east, 600 feet south of T road west, in southeast corner of school yard; iron post stamped "456 1908"	456.244
Black Oak School, corner of sections 27, 28, 33 and 34, T. 3 N., R. 14 W., at northwest corner of crossroads, in southeast corner of school yard, in tree root; spike	497.20
T. 3 N., R. 13 W., at corner of sections 21, 22, 27 and 28, at southwest corner of crossroads, by picket fence; iron post stamped "506 1908"	505.920
Claremont, in front of station; top of rail	509.7

GRANT SCHOOL SOUTH, TO NEAR PATTON.

	Feet.
T. 2 N., R. 12 W., quarter corner between sections 20 and 21, at northeast corner of crossroads, in southwest corner of school yard; iron post stamped "445 1908"	445.641
T. 1 N., R. 12 W., corner sections 8, 9, 16 and 17, at northwest corner of crossroads, by picket fence; iron post stamped "462 1908"	462.325

FROM POINT 5.6 MILES WEST OF GRANT SCHOOL SOUTH AND EAST, VIA FRIENDS-VILLE, TO NEAR PATTON.

	Feet.
T. 2 N., R. 13 W., quarter corner between sections 21 and 28, in front of T road west of schoolhouse, 4 feet south of corner fence post; iron post stamped "460 1908"	460.636
Lancaster, 400 feet east by 400 feet south of middle of section 4, T. 1 N., R. 13 W., in west face of Lutheran church directly under window south of entrance, about 2.5 feet above ground; aluminum table stamped "494 ILLINOIS 1908"	494.584
Stoeltz Schoolhouse, quarter corner between sections 20 and 21, T. 1 N., R. 13 W., at southwest corner of crossroads, in northeast corner of school yard; iron post stamped "459 1908"	459.431
Friendsville, quarter corner between sections 23 and 24, T. 1 N., R. 13 W., in east side of brick house of Dr. C. S. Couch, near southeast corner, about 3 feet above ground; bronze tablet stamped "482 VIN"	481.722

FROM STOELTZ SCHOOL WEST, TO PINHOOK, THENCE NORTH, TO BROWNSVILLE.

	* Feet.
T. 1 N., Rs. 13 and 14 W., 0.25 mile north of quarter corner between sections 19 and 24, in front of and about 20 feet south of center line of T road east; iron post stamped "409 1908"	409.460
Pinhook, quarter corner between sections 21 and 22, T. 1 N., R. 14 W., at northeast corner of T road north; iron post stamped "435 1908"	435.611
T. 1 and 2 N., R. 14 W., about 0.1 mile east of quarter corner between sections 4 and 33, at northwest corner of crossroads, opposite small white house; iron post stamped "458 1908"	458.416
Red Head Schoolhouse, quarter corner between sections 16 and 21, T. 2 N., R. 14 W., at southwest corner of crossroads, in northeast corner of school yard; iron post stamped "462 1908"	462.584
Preston School, corner of sections 3, 4, 9 and 10, T. 2 N., R. 14 W., in front of T road east, 600 feet south of T road west, in southeast corner of school yard; iron post stamped "456 1908"	456.244

GEOGRAPHIC POSITIONS OF QUADRANGLES.

The following are the geographical positions of points in the three quadrangles covered by this report:

Hardinville quadrangle.

Crawford, Jasper, Lawrence and Richland Counties—The following geographic positions were determined by primary traverse run in July, 1907, by Mr. J. R. Ellis, assistant topographer. The line starts from Claremont triangulation station and follows highways along south and east edges of quadrangle to Robinson, thence westerly along the Illinois Central Railroad to Oblong triangulation station, thence westerly along railroad to Willow Hill, thence southerly along railroad and highways on west edge of quadrangle to Claremont triangulation station:

Geographic Positions Along Highways Near South Border of Quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Claremont triangulation station of the U. S. Lake Survey and U. S. C. & G. S., in section 29, T. 4 N., R. 14 W., German township, 3 miles northwesterly from town of Claremont a station on Ohio and Mississippi Railroad, on land of Brinkley heirs. Station mark: Two stone posts, one above the other in the usual manner. Reference marks. One north 67° 33' west, distant 23.1 meters. One north 0. 39' west, distant 7.8 meters. One north 71° 45' east, distant 24.6 meters from station mark. Northwest corner of section 29 bears north 60° 03' west, distant 847 meters from station mark.	38 45 28.5	87 59 40.8
T. 4 N., R. 14 W., corner sections 28, 29, 32 and 33, 20 feet south to corner fence post.....	38 44 49.1	87 59 03.2
T. 4 N., R. 14 W., corner sections 27, 28, 33 and 34, T road west at school house, 10 feet east to rail fence.....	38 44 48.8	87 57 55.4
T. 4 N., R. 14 W., quarter corner between sections 26 and 27, crossroads, 15 feet north to center of bridge.....	38 45 15.1	87 56 47.2
T. 4 N., R. 14 E., quarter corner between sections 25 and 26, center of crossroads.....	38 45 14.9	87 55 39.3
T. 4 N., R. 13 and 14 W., quarter corner between sections 25 and 30, center of crossroads, Richland and Lawrence county line.....	38 45 14.7	87 54 31.4
Sumner, 2.25 miles north by 0.25 mile west of; on west side of road at T road east, 2 feet west to fence, 25 feet east to center of T road east, in top of concrete block 8 x 8 x 20" in ground, aluminum tablet stamped "Prim. Trav. Sta. No. 10, 1907, ILLINOIS".....	38 44 47.8	87 51 58.4
T. 4 N., R. 13 W., corner sections 27, 28, 33 and 34, 25 feet south to corner fence post.....	38 44 47.7	87 51 06.9
T. 4 N., R. 13 W., east corner sections 27 and 34, stone, T road west at church.....	38 44 47.5	87 49 58.9
T. 4 N., R. 13 W., corner sections 25, 26, 35 and 36, center of T road south.....	38 44 44.0	87 48 55.7
T. 4 N., R. 12 and 13 W., corner sections 25, 30, 31 and 36, crossroads, 10 feet west to center of small bridge.....	38 44 43.8	87 47 48.1
T. 4 N., R. 12 W., stone corner sections 29, 30, 31 and 32, T road south Westport, 5.75 miles due south of; on east side of T road west at Fairview church, in top of concrete block 8 x 8 x 20" inches, aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1907, ILLINOIS".....	38 44 46.0	87 45 35.3
T. 4 N., R. 12 W., corner sections 28, 29, 32 and 33, center of T road west.....	38 44 45.9	87 45 35.5

Geographic Positions Along Highways Near East Border of Quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 4 N., R. 12 W., corner sections 20, 21, 28 and 29, T road west.....	38 45 39.2	87 45 35.4
T. 4 N., R. 12 W., stone corner sections 16, 17, 20 and 21, fence east and west.....	38 46 32.2	87 45 35.4
Center of T road east.....	38 46 44.2	87 46 38.5
T. 4 N., R. 12 W., corner sections 7, 8, 17 and 18, center of crossroads..	38 47 23.4	87 46 41.8
Westport, 0.75 mile east of; intersection at T road west.....	38 49 40.2	87 44 42.8
T. 5 N., R. 12 W., corner sections 21, 22, 27 and 28, center of county line road at north and south fence.....	38 51 00.0	87 44 26.0
Crawford, 1 mile north of; Lawrence county line.....	38 51 54.8	87 43 52.1
T road east, southeast corner, 7 feet north and 4 feet west to maple tree, 35 feet north and 20 feet west to center of T road east, in concrete block, aluminum tablet stamped "Prim. Trav. Sta. No. 12, 1907, ILLINOIS".....	38 52 57.9	87 43 52.7
Quarter corner between sections——, center of crossroads.....	38 53 40.5	87 43 53.1
T. 5 and 6 N., R. 12 W., corner sections 3, 4, 33 and 34, stone, 1,340 feet east of; T road east on T. S. line.....	38 54 41.6	87 44 10.4
T. 6 N., R. 12 W., corner sections 27, 28, 33 and 34, T road west, 25 feet due east to corner fence post.....	38 55 34.0	87 44 27.5
Road west at Indian boundary.....	38 56 19.8	87 44 51.8
New Hebron, T road just northeast of; 10 feet northeast to large black oak tree.....	38 57 31.1	87 44 35.8
Lane east at turn of road.....	38 58 19.1	87 44 30.2
T. 6 N., R. 12 W., corner sections 3, 4, 9 and 10, T road west at school house, 12 feet east to corner yard fence.....	38 58 59.3	87 44 19.2
T. 6 N., R. 12 W., north corner sections 3 and 4, center of T road south, just east of entrance to Robinson Fair Grounds.....	38 59 54.5	87 44 19.8
Robinson court house, in stone post at south entrance to grounds, aluminum tablet stamped "Prim. Trav. Sta. No. 13, 1907, ILLINOIS".....	39 00 18.2	87 44 21.6

Sumner quadrangle.

Edwards, Lawrence, Richland and Wabash Counties—The following geographic positions on U. S. Standard datum were determined by primary traverse in 1908 by J. R. Ellis, assistant topographer. The line starts from Claremont triangulation station of the U. S. Lake Survey and Coast and Geodetic Survey and follows south along public highways to Parkersburg triangulation station, thence to southwest corner of Sumner quadrangle, thence east to point near Patton and north along border of quadrangle to primary traverse station No. 11, 1907, Illinois:

Geographic Positions Along Highways.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
St. James church, center of cross roads at.....	38	44	49.2	87	59	54.4
T. 1 N., R. 14 W., $\frac{1}{4}$ corner between secs. 20 and 21, center of cross roads	38	30	15.3	87	59	05.2
Mills Prairie school house No. 13, at northeast corner of T road north,						
0.25 mile east of, 25 feet south and 25 feet west to $\frac{1}{4}$ corner between						
secs. 21 and 22, T. 1 N., R. 14 W., elevation 435; iron post stamped						
"Prim. Trav. Sta. No. 13, 1908, Illinois".....	38	30	15.2	87	57	57.8
Edwards-Wabash county line, center of bridge over Bonpas creek...	38	30	18.4	87	56	53.2
T. 1 N., R. 14 W., $\frac{1}{4}$ corner between secs. 23 and 24, center of T road						
south.....	38	30	14.6	87	55	48.1
T. 1 N., R. 13 and 14 west, $\frac{1}{4}$ corner between secs. 19 and 24, center of						
T road west.....	38	30	14.5	87	54	41.2
Barney Prairie church, stone at T road west at.....	38	30	10.0	87	47	55.0
Harmony school house, in southwest corner of yard at; 35 feet south and						
30 feet west to $\frac{1}{4}$ corner between secs. 20 and 31, T. 2 N., R. 12 W.,						
cross roads; elevation 445; iron post stamped "Prim. Trav. Sta. No.						
17, 1908, Illinois".....	38	35	26.0	87	45	34.1
T. 2 N., R. 12 W., $\frac{1}{4}$ corner between secs. 20 and 21, center of cross roads	38	35	25.7	87	45	34.5
T. 2 N., R. 12 W., corner secs. 16, 17, 20 and 21.....	38	35	52.0	87	45	34.0
T. 2 N., R. 12 W., corner secs. 8, 9, 16 and 17.....	38	36	44.6	87	45	33.4
Grant school house, in southeast corner of yard at; elevation 446; iron						
post stamped "Prim. Trav. Sta. No. 18, 1908, Illinois".....	38	37	38.2	87	45	33.4
T. 2 N., R. 12 W., corner secs. 4, 5, 8 and 9, center of cross roads.....	38	37	37.5	87	45	33.1
T. 2 N., R. 12 W., corner secs. 4 and 5 (north corner), T road south....	38	38	34.6	87	45	33.0
T. 3 N., R. 12 W., corner secs. 32 and 33 (south corner), T road north..	38	38	34.6	87	45	34.6
Bridgeport, at northeast corner of cross roads about 3 miles south of;						
iron post stamped "Prim. Trav. Sta. No. 19, 1908, Illinois".....	38	39	28.0	87	45	33.8
T. 3 N., R. 12 W., corner secs. 28, 29, 32 and 33, cross roads.....	38	39	27.7	87	45	34.0
Bridgeport, at northwest corner of cross roads 2 miles south of, eleva-						
tion 489; iron post stamped "Prim. Trav. Sta. No. 20, 1908, Illinois"...	38	40	20.7	87	45	34.3
T. 3 N., R. 12 W., corner secs. 20, 21, 28 and 29, center of cross roads...	38	40	20.4	87	45	33.9
T. 3 N., R. 12 W., corner secs. 16, 17, 20 and 21, center of T road west..	38	41	13.2	87	45	33.5
T. 3 N., R. 12 W., corner secs. 8, 9, 16 and 17.....	38	42	06.2	87	45	33.3
Bridgeport, Main street crossing Baltimore & Ohio railroad.....	38	42	19.2	87	45	35.3
T. 3 N., R. 12 W., corner secs. 4, 5, 8 and 9, center of cross roads.....	38	42	59.3	87	45	33.1
T. 3 N., R. 12 W., corner secs. 4 and 5 (north corner), 20 feet north to T						
road south.....	38	43	52.6	87	45	33.0
Westport 5.75 miles due south of; on east side of T road west at Fair-						
view church, in top of concrete block 8 by 8 by 20 inches; aluminum						
tablet stamped "Prim. Trav. Sta. No. 11, 1907, Illinois".....	38	44	46.0	87	45	35.3

Magnetic Declination of east border of quadrangle $3^{\circ} 50'$ east.
Magnetic Declination of south border of quadrangle $3^{\circ} 47'$ east.
Magnetic Declination of west border of quadrangle $3^{\circ} 36'$ east.

*Vincennes quadrangle.**Geographic Positions Along Highways Near West Border of Quadrangle.*

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Patton, at southeast corner of T road west, 1.25 miles north and 0.5						
miles east of; 15 feet north and 20 feet west to center of T road; iron						
post stamped "Prim. Trav. Sta. No. 16, 1908, Illinois".....	38	29	54.5	87	44	29.8
T. 1 N., R. 12 W., corner secs. 15, 16, 21 and 22.....	38	30	34.3	87	44	30.7
T. 1 N., R. 12 W., corner secs. 9, 10, 15 and 16, center of cross roads....	38	31	27.3	87	44	31.8

Geographic Positions Along Highways Near South Border of Quadrangle—
Concluded.

Stations.	Latitude.			Longitude.		
	°	'	"	°	'	"
T. 1 N., R. 12 W., corner secs. 3, 4, 9 and 10, center of T road west, at school house.....	38	32	20.0	87	44	32.6
T. 1 N., R. 12 W., stone corner secs. 3 and 4 (north corner).....	38	33	14.9	87	44	33.4
T. 2 N., R. 12 W., stone corner secs. 33 and 34 (south corner).....	38	33	14.9	87	44	29.3
T. 2 N., R. 12 W., corner secs. 27, 28, 33 and 34, Lawrence-Wabash county line.....	38	34	06.8	87	44	28.5
Harmony school house, 1 mile east of, center of cross roads.....	38	35	25.4	87	44	27.0

Magnetic Declination west border of quadrangle 3° 50' east.

ELEVATIONS OF OIL WELLS.

The elevation of most of the oil wells in the area studied were secured by means of a Locke or hand-level. The secondary bench marks served as bases for the work, and levels were run from them to the wells. The limit of error in this work was about two feet, although it was probably less because of the check with previously determined elevations and other bench marks. Elevations of about 5,200 wells were determined in the two counties. The leveling in the Hardinville quadrangle was done wholly by use of the Locke level while the elevations of the wells in the Sumner quadrangle were determined by use of a Y level in charge of W. E. Deuchler. As no leveling had been done in the Vincennes quadrangle it became necessary to run secondary levels through the active oil fields from the Sumner quadrangle. About 24 square miles of secondary levels were made in this fashion.

COLLECTION OF WELL RECORDS.

Records were collected from about 95 per cent of the wells in the area although about 94 per cent of these were skeleton logs or simply notations of the depth and thickness of the producing sands. The scarcity of detailed logs is probably due to rapidity of early development, and the lack of appreciation of their importance. Many detailed records are indispensable in a geological study of any area, especially such as Illinois, which is so covered with drift as to conceal the sequence of formations and practically all evidence of folding. Too little attention is paid to the formations above the oil producing sands, which may often prove excellent key horizons, or widespread formations, that may enable a geologist to interpret future records more readily. All operators and drillers are urged to note the positions of all formations in their wells, as a matter of possible value to themselves in drilling in other areas in the State, and as an assistance to the survey whose duty it is to work out the geological problems connected with the oil industry of the State.

The vast number of records collected for study necessitated a compact and efficient method of readily locating desired logs. A loose-leaf system was established for collecting records in the field and later filing these permanently in the office in suitable binders. The records are arranged by township binders and in each of these, by section, farm name, operator and well number.

GEOLOGICAL ASPECTS.

GENERAL STATEMENT.

It is particularly valuable if an area whose oil resources are under investigation has a persistent key horizon at or near the surface, from which may be determined the interval to the producing sands and the geologic structure. Coals, such as the Pittsburg coal of the Appalachian region or the Herrin (No. 6) coal of western Illinois, serve as excellent key horizons. Limestones of peculiar lithological characteristics are also good horizons for these purposes. Unfortunately, the formations along the eastern boundary of Illinois, as over most of State, are concealed with drift and have been studied but little. Moreover, there are no coal mines in this section of the State and the wells of the main fields have offered little or no help toward recognizing persistent horizons close to the surface. Under these conditions it became necessary to resort to altitudes of the sand with respect to sea level in the determination of structure and sand relations.

LOCAL NAMES OF SANDS.

The productive horizons in the several pools of Lawrence county were given the names of the land owners upon whose farms oil was first found in these particular horizons, except for the lenticular Bridgeport sands, first discovered in the county. These were named after the town of Bridgeport. The producing sands of Crawford county are also lenticular and are called the Robinson sands, after the city of Robinson. The operators were able to follow and distinguish the sands in their development from the shallow to the deeper fields and in computing their records, designated the names of the sands with fair accuracy. Where the names were missing, the sands were later found to fit their particular horizons on the structure maps and cross-sections.

CORRELATION OF SANDS.

Strip plotting was resorted to in correlating sands. The record of the wells were plotted to uniform scale, and with the same symbols, on long narrow strips of cross-section paper. The strips were compared, and by shifting one at the side of the others, the relations of the logs to one another were found. The interpretation and correlation of logs, especially those of wells in the Pennsylvanian beds, requires much work and the results are not always satisfactory.

ALTITUDES OF SANDS.

The method used to ascertain the altitudes of the tops of the producing sands was to subtract the elevation of the mouth of the well from the depth to the sand. The altitudes were usually below sea level and therefore were negative. In drawing a contour map under these conditions the high numbers would signify low places and reversely, low numbers high places. In order to avoid confusion in studying contouring an assumed plane 1,500 feet below sea level was chosen, and from this the negative altitudes were subtracted. The resulting high

figures then correspond to high places in the structure and the low numbers to low places.

TABLES OF WELL DATA.

The desire to present the vast amount of data from wells in the studied area resulted in the compact tables presented on page 185. In order to show reference from well to table it became necessary to adopt a system of well numbers that would not crowd the map. Each section is, therefore, divided into quarters which serve as units for numbering. The total number of wells for each quarter-section is thus kept below 100. References to wells in the text are abbreviated as follows, Pet. sec. 30, SE., No. 60, which signifies well No. 60 in the southeast quarter of section 30, Petty township, Lawrence county, and the record of which may be found in the tables of well data. Other abbreviations are as follows: Ob., Oblong township; Rob., Robinson township; H. C., Honey creek township; Mar., Martin township, all of Crawford county; Bport., Bridgeport township; Law., Lawrence township, and Den., Dennison township, all of Lawrence county.

COUNTOUR MAPS.

The structure of the producing sands is graphically presented by use of contours or lines defining the elevation, horizontal form, and slope of the top of the sand. The elevation of the contour is designated by the large number which is set in, or at the end of, the line. The slope, or dip and rise of the sand, is expressed through numbers on consecutive contour lines.

The contour maps were drawn on a key or base map which shows the position and reference numbers of all the wells drilled in the area and also additional culture such as towns, streams, roads, pumping stations, etc. All wells that furnished data for a given sand were plotted in position on a skeleton map on which the culture was omitted. The positive altitudes of the sands, with respect to the assumed datum plane 1,500 feet below mean sea level, were contoured between wells. These constitute the structure maps.

CROSS-SECTIONS.

The structure of the several producing sands is further shown by the use of cross-sections. They portray graphically the rise and the fall of the oil sands along chosen lines and are intended to make clearer the mental picture of the contour idea to those who are not familiar with contouring. At the same time the sections show the relation of the structure of one sand to that of another. The only cross-sections presented in this report are those of Lawrence county.

CHAPTER III.

Detailed Geology of the Crawford County Fields.

GENERAL FEATURES OF THE OIL FIELD.

The shape and extent of the Crawford county pools within the Hardinville quadrangle, are shown on Plate IV, the base map of the area. The map shows the development up to January 1, 1909. The Robinson pool is about 7 miles wide between Oblong and Robinson, but it narrows to about $3\frac{1}{2}$ miles at the southern limit of the county. The western boundary of the oil field trends northwest and southeast and is distinctly abrupt. Its eastern edge is very irregular and the oil zone appears to have pinched out here and there as shown by light producing wells and many dry holes.

A barren area about 3 miles wide separates the Robinson and Honey creek pools in Crawford county and continues south and southwest in a Y shape, separating the Lawrence county pools from those of Crawford county. Detailed data are not at hand to account definitely for the break. It is probably due to a series of undulations transverse to the major axis of the dominant anticline, since the Honey creek sands lie lower structurally than those of the Robinson pool and the Lawrence county sands, higher than those in Crawford county.

Other conspicuous gaps in the Robinson pool are the Hardinville gas dome and an irregular break from east to west directly south of the Illinois Central Railroad. The area just east of Hardinville, namely section 35, Martin township, is barren of oil, except in the northwest corner and along the south line, but shows evidence of fair gas pressures. The producing sands indicate a structural dome. The narrow barren area through sections 2, 3, 4, 8, 9, 10 and 16, T. 6. N., R. 13 W., is due to noticeable thinning of the sand which, elsewhere, varies between 2 and 15 feet in thickness. In some instances the sands are entirely absent. This condition is probably accompanied by a lack of sufficient porosity in the sands to allow oil diffusion; at any rate, there is more regularity in the position, thickness, and production of the sands on both sides of the break.

The Crawford county pools are distinctive for possessing one general oil producing zone, known as the Robinson sand. This sand is so broken

and lenticular that it offers little opportunity for structural study. In fact, the sand shows innumerable streaks, tongues, and detached portions and so prohibits correlation and contouring. In some portions of the field, however, the sand is regular in its distribution. It is split into two or three persistent lenses that show average depths of about 850, 900, and 940 feet with an average interval between the tops of the sands of about 50 feet. The thickness of the sand lenses varies between 2 and 50 feet with an average of about 25 feet. The average thickness of the lenses is difficult to estimate because a great many wells merely penetrate the pay sand and consequently its total thickness remains unknown. Beyond the confines of these areas the sand lenses merge into one another and become even consolidated in the wells listed below:

List of Wells in Which the Robinson Sand is Exceptionally Thick.

Township.	Section.	Quarter-section.	Well number.
Martin.....	1.....	NW.	10
	1.....	SW.	6
	21.....	SW.	13, 18
	22.....	NE.	31
	23.....	NE.	1
	26.....	SE.	8, 13
	27.....	SW.	30
	27.....	SE.	18
	28.....	NE.	6
	34.....	NW.	1, 2, 5, 33
	35.....	NW.	2, 5
Honey Creek.....	6.....	SW.	5
	10.....	SW.	7
	29.....	SE.	3
Oblong.....	2.....	SE.	1
	5.....	NW.	20
	6.....	NE.	6
	7.....	NE.	2
	15.....	NW.	31
	16.....	SW.	12

The maximum thickness of the consolidated sand lenses is 122 feet. In other sections of the field either one, two, or even all the lenses are absent. Those wells in which there is no sand, are as follows:

List of Wells From Which the Robinson Sand is Absent.

Township.	Section.	Quarter-section.	Well number.
Oblong.....	3.....	SE.	1
	5.....	NE.	27
	8.....	NE.	12
	9.....	NW.	9
	18.....	NW.	1, 2
	18.....	SW.	1
	18.....	SE.	2
	31.....	SE.	5
Honey Creek.....	6.....	SE.	1
	22.....	NE.	1
	31.....	SE.	9

The wells in which one or two lenses are absent are too numerous to mention.

There are additional lenses of sand both above and below the zone which includes the three persistent lenses. One above is known as the

"gas" or "stray" sand. It is usually from 6 to 20 feet thick and about 20 to 50 feet above the topmost lens of the Robinson sand. This sand produces small quantities of gas in portions of the field, particularly in the northern part of the Hardinville quadrangle. The sand lens lower than the oil zone may belong to the Robinson sand as a fourth lens, so closely is it related to the upper lenses. It is not productive. There are other minor streaks of sand even in the producing zone that add further confusion to correlation.

There is a shallow sand that is productive of oil in section 27, Martin township that may be comparable to one of the shallow Clark county sands. Its extent is very limited.

DETAILED STRUCTURE OF THE DISTRICT.

Owing to the irregular deposition of sands and shales it was found impossible to correlate and contour any sand beds definitely except the top lens of the Robinson sand which is somewhat persistent over the area. Even this work loses much of its scientific value because parts of it are suppositional through the overlapping and wedging out of this sand bed, as well as those above and below it.

The altitudes of the top lens are assembled and contoured in Plate 5. The general structure of the Robinson pool reveals a broad and gentle arch which is divided into two parts by a transverse basin. The northern part shows the arch to be about 6 miles wide with its crest 95 feet above the lowest explored portions of its limbs. This portion of the arch is subdivided into two crests of the same height. One lies in section 5 and the other in section 10, Oblong township. The southern portion of the arch is about four miles wide and 110 feet high. The crest of this portion lies in section 35, Martin township. The two arches merge into a depressed or synclinal area through sections 13, 14, 15 and 21, T. 6 N., R. 13 W., the bottom of which is 65 feet lower than the crest of the northern arch and 105 feet lower than that of the southern arch. The 1,100-foot contour follows the limits of the pool in a general way and seems to include most of the productive zone.

The contours on the portion of the Honey creek pool shown on the map indicate a lower productive level than the Robinson pool. The heart of the production lies along the 1,080-foot level which is equivalent to the lowest productive levels on the arch of the Robinson pool. This pool is a continuation of the Robinson pool and the difference in oil levels seems to indicate an intervening depression.

The western boundary of the productive field in Crawford county is sharply defined and is marked by an abundance of salt water. It is also worthy of note that there are at least seven wells along this line that show an absence of sands. The western limb of the arch is much the steeper, which fact corroborates previous observations of the LaSalle anticline in its exposure near LaSalle, Ill.¹ It would then follow from the general knowledge of the Illinois basin² that the Robinson sands assume a much steeper dip a short distance west of the oil field. The tendency of the sands to remain locally flattened on the east side

¹ Weller, Stuart, The, geological map of Illinois: Bull. Ill. State Geol. Survey, No. 6, 1907, p. 12.

² Oil resources of Illinois with special reference to the area outside the Southeastern fields: Bull. Ill. State Geol. Survey, No. 16, 1910, pp. 48-51.

of the arch is in keeping with the slope of the arch at LaSalle. The Duncanville and Flat Rock pools lie at about the same general levels as the Honey creek pool and add further evidence to the mild nature of the eastern limb of the anticline.

RELATIONS OF STRUCTURE TO OIL AND GAS.

The Robinson sands have proved rich in their yield of oil. Of the 2,370 wells mapped in this area but 206 or 8.7 per cent were barren of oil or gas. The range of initial production lies between 1 and about 1,600 barrels. The lower lenses have been slightly more productive than the top lens. The distribution of oil has not been even over the area because of the following factors:

1. The porosity of the sands is variable and in many places they are impervious. The drillers have reported the sands hard and dry and thus incapable of containing oil.

2. The sands thin and thicken commonly and in some localities pinch out altogether. Non-porosity usually accompanies such condition. The light producing and barren streak through sections 2, 3, 4, 9, 8 and 7 Martin township offered evidence supporting this.

3. The sandstones are so closely interbedded and related to the shales along the producing zone that cemented mixtures of the two probably prohibit extensive diffusion of oil, gas, or water in some areas.

4. The best productive areas are attended with thicknesses between 20 and 40 feet of sand and are usually free from large amounts of salt water.

5. Local dry spots in the midst of very productive territory cannot be attributed to small depressions or knolls in the sand bodies but they are explained as due to the thinness and non-porosity of the bed. The following few wells illustrate this fact:

Mar. sec. 26, NW. No. 4.

Mar. sec. 36, SW. No. 5.

Ob. sec. 15, SE. No. 8 and 19.

Ob. sec. 10, NW. No. 12.

Rob. sec. 1, NE. No. 7.

H. C. sec. 6, NE. No. 11.

The top lens of the Robinson sand is especially rich in section 9 of Oblong, section 6 of Honey creek, and sections 1 and 2 of Martin townships. The lower lenses are prolific in sections 21, 22, 23, 34, and particularly 26 and 27, Martin township; 10, 14, 15 and 16, Oblong township, and 6, 10 and 15, Honey creek township. Only about half of the records collected furnished information of the initial yield. Enough data, however, was gathered to indicate the distribution of oil in the various sections of the area. The following table shows the number of wells that furnished data of the production. These are listed under headings of townships, sections, No. 1 and lower lenses, and initial production. The gas and dry wells are also given:

List of Wells in Crawford County, With Initial Productions.

Location.			Number of wells indicating initial production.							
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Martin.....	1.....	No. 1.....	1	2	4	2	1		1	2
		Lower.....	5	10	1		1		2	
	2.....	No. 1.....		5	7	4	9			2
		Lower.....	3	9	3	2	1		1	
	3.....	No. 1.....			1					2
		Lower.....	1	3						
	11.....	No. 1.....								4
		Lower.....	1							
	12.....	No. 1.....			1					2
		Lower.....		3						
	20.....	No. 1.....								5
		Lower.....	1	3						
	21.....	No. 1.....			1	2	2	7		3
		Lower.....	3	6	6	12	14	9		
	22.....	No. 1.....		5			1	1	1	1
		Lower.....	2	16	6	12				
	23.....	No. 1.....	1	4			1		1	8
		Lower.....		12	7	2	1	1		
	24.....	No. 1.....	1	3						2
		Lower.....	3	5	1	1	1			
	25.....	No. 1.....		4						4
		Lower.....	1	4	2	7	1			
	26.....	No. 1.....		1	2		1			1
		Lower.....	1	9	25	18	1	2		
	27.....	No. 1.....		1	2		4			3
		Lower.....	2	2	8	12	6	7		
	28.....	No. 1.....		1	1	1				6
		Lower.....	3	2	1	3	1			
	33.....	No. 1.....								3
		Lower.....	1							
	34.....	No. 1.....		4	3	4	2	1		
		Lower.....		2	5	5	6	5		
	35.....	No. 1.....		1	1				4	1
		Lower.....	2	3	2					
	36.....	No. 1.....		14	6	1				3
		Lower.....	2	7	4	1			1	
	13, 19, 29, 32	No. 1.....								6
		Lower.....								
Oblong.....	2.....	No. 1.....	2	1						4
		Lower.....	3	8	8		1		1	
	3.....	No. 1.....	2	2	1					3
		Lower.....	1	1	1	1				
	4.....	No. 1.....	1	7	1					1
		Lower.....		3						
	5.....	No. 1.....				3				5
		Lower.....		2	2	8	2	2		
	6.....	No. 1.....								4
		Lower.....	1	3						

List of Wells in Crawford County, With Initial Productions—Continued.

Location.			Number of wells indicating initial production.						
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Dry.
Oblong— <i>Concl'd.</i>	7.....	No. 1.....	.....	1	.....	.....	.....	.....	5
		Lower.....	4	10	.....	1	.....	.....
	8.....	No. 1.....	3	9	2	1	.....	.....	4
		Lower.....	.....	.....	.....	.....	.....	.....
	9.....	No. 1.....	1	10	9	7	.....	1	6
		Lower.....	1	2	.....	.....	.....	.....
	10.....	No. 1.....	1	4	.....	3	1	.....	2
		Lower.....	2	5	9	11	2	.....
	11.....	No. 1.....	.....	8	.....	1	.....	.....	1
		Lower.....	8	6	.....	1	.....	1	4
	14.....	No. 1.....	.....	2	1	1	.....	1	6
		Lower.....	.....	5	4	6	3	3	
	15.....	No. 1.....	2	7	1	.....	2	1	3
		Lower.....	1	15	12	13	13	.....
	16.....	No. 1.....	1	2	.....	.....	1	.....	5
		Lower.....	.....	3	5	10	8	2	
	17.....	No. 1.....	3	2	2	.....	.....	.....	7
		Lower.....	1	7	2	.....	.....	.....
	18.....	No. 1.....	.....	.....	.....	.....	.....	.....	4
		Lower.....	2	8	5	1	.....	.....
	31.....	No. 1.....	.....	.....	2	1	.....	.....	2
		Lower.....	.....	1	.....	.....	.....	.....
	32.....	No. 1.....	.....	1	1	1	3	.....	3
		Lower.....	.....	2	3	2	.....	.....
	33.....	No. 1.....	2	4	.....	4	2	.....	2
		Lower.....	1	.....	.....	.....	.....	.....
	34.....	No. 1.....	1	3	.....	.....	.....	.....
		Lower.....	.....	.....	1	.....	.....	.....
	35.....	No. 1.....	2	3	3	.....	.....	.....	1
		Lower.....	.....	4	1	.....	.....	.....
	1, 11.....	No. 1.....	.....	.....	.....	.....	.....	.....	3
		Lower.....	.....	.....	.....	.....	.....	.....
Robinson.....	1.....	No. 1.....	1	1	.....	.....	.....	.....	4
		Lower.....	.....	1	.....	.....	.....	.....
	6.....	No. 1.....	.....	1	.....	.....	.....	1	7
		Lower.....	2	6	.....	.....	.....	.....
	12.....	No. 1.....	.....	1	1	.....	.....	2	3
		Lower.....	.....	.....	.....	.....	.....	.....
	13.....	No. 1.....	.....	.....	.....	.....	.....	.....	1
		Lower.....	1	.....	.....	.....	.....	.....
	36.....	No. 1.....	1	.....	2	.....	.....	.....	3
		Lower.....	.....	6	2	.....	.....	.....
	4, 5, 7, 8, 9, 10, 16, 17, 18, 31, 32, 33.....	No. 1.....	.....	.....	.....	.....	.....	.....	13
		Lower.....	.....	.....	.....	.....	.....	.....
Honey Creek.....	5.....	No. 1.....	.....	.....	.....	.....	.....	1	4
		Lower.....	.....	1	2	.....	.....	.....

List of Wells in Crawford County, With Initial Productions—Concluded.

Location.			Number of wells indicating initial production.							
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Honey Creek— <i>Concluded.</i>	6.....	No. 1.....	.....	3	5	3	1	1	.....	8
		Lower.....	.....	3	5	3	1	2	1	
	10.....	No. 1.....	.....	1	.....	4	1	.....	.....	2
		Lower.....	.....	.....	1	.....	.....	.....	.....
	15.....	No. 1.....	.....	4	1	1	.....	.....	.....	1
		Lower.....	.....	.....	1	.....	.....	.....	.....
	16.....	No. 1.....	1	4	1	1	.....	.....	.....	2
		Lower.....	1	3	.....	.....	.....	.....	.....
	31.....	No. 1.....	.....	4	2	.....	.....	.....	1	4
		Lower.....	7	17	6	.....	.....	.....	.....
	32.....	No. 1.....	.....	.....	.....	.....	.....	.....	2	8
		Lower.....	4	3	1	.....	.....	.....	.....
	2, 3, 7, 8, 9, 17, 18, 19, 20, 28, 29, 30, 33, 34..	No. 1.....	.....	.....	.....	.....	.....	.....	17	16
		Lower.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	No. 1.....	27	130	64	131	32	13	42	206
		Lower.....	71	221	142	46	63	33	.....

In general throughout the field gas occurs with oil, but not in large quantities. The wells yielded enough for use on the leases and often for drilling but not for commercial use. The thin stray lens above the No. 1 yielded abundant gas, particularly in the northwest corner of Honey creek township. The quantities were from 1,000,000 to 4,000,000 cubic feet daily and under pressures from 200 to 400 pounds to the square inch. These wells are connected to large mains and furnish gas to nearby towns. This same lens is productive of less quantities of gas in sections 2 and 35, Oblong township and 36 and 1, Robinson township.

The contours of the No. 1 lens reveals a small dome on the anticline in section 35, Martin township. Several small gas wells lie about 25 feet down from the crest of the arch or within the 1,160-foot contour. It is true that in Crawford county, as well as in Lawrence county, the best gas wells are not necessarily found on the highest points of the arch but are located on its slopes. Since the oil lies lower structurally than the gas, the same would follow for the oil accumulation. This would perhaps suggest that where the crests of anticlines are known in unproven areas, drilling should be started slightly to either side of the highest point.

RELATIONS OF SALT WATER TO STRUCTURE.

The oil field shows salt water at many points, but particularly along its western limit. Water does not uniformly fill the rocks of the region,

as there are many dry strata, of which some are capable of containing water. Great quantities of salt water occur upon the limbs of the anticline and in the Illinois basin beyond the productive area and at its sharply defined boundaries. All the lenses of the Robinson sand are well saturated along this line, but the upper lenses are generally barren of water within the oil pool. The lower lenses reveal water across the fold and in some portions under the oil. Drilling has proven that the oil lies near the top of the lower sand lenses and consequently but few wells pass through the oil stratum and into the water for fear of drowning out the oil. The water is generally very abundant and seems to be under pressure. Its release from the sand sets up a very rapid flow that is difficult to stop.

The basin which divides the major arch in the Robinson pool is barren of water but is productive of oil. This corroborates the theory as to the accumulation of oil in dry rocks. The first lens, however, is less productive than the lower ones through this basin.

The trough that separates the Honey creek and Robinson pools shows salt water in the scattered dry wells drilled into it. Most of the wells in the portion of the Honey creek pool included in this report were only drilled into the oil pay. The wells that penetrated beneath the pay tapped the salt water zone which would indicate that the water controls the accumulation of the oil and instrumental in holding it captive in its present position.

The eastern side of the oil field also shows abundant water in the lower lens but apparently not so much as at the corresponding level on the steeper limb of the arch. Both water and oil are irregularly distributed on the east limb of the anticline.

CONCLUSION.

It is obvious from the position of the water and oil along the LaSalle anticline that the water has controlled the accumulation of oil in the arch. The water probably has been a means of originally collecting and causing the oil to migrate from long distances up the slope of the arch and into its crest. This is effective for all lenses of the Robinson sand. The degree of saturation is variable over the crest of the arch. The lower lenses are frequently reported saturated with water through the field whereas, for the most part, the upper lens shows little saturation.

CHAPTER IV.

Detailed Geology of the Lawrence County Field.

GENERAL FEATURES OF THE OIL FIELD.

The shape and extent of the oil field in Lawrence county is shown in Plate VI, the base map of the area. The development is indicated to July 1, 1911. The field has a northwest and southeast trend with its northern limit exactly on the Lawrence-Crawford county line and its southern-most extremity in sections 11 and 12, T. 2 N., R. 12 W. The pool is continuous for 17 miles, although it is thinly developed at both ends. It is about $2\frac{1}{2}$ miles wide from the county line to about 9 miles south. It then broadens and includes the Dennison township fields in a width of about 5 miles and narrows again at the extreme southern end to about 3 miles. The field changes its course on the vicinity of Bridgeport from about north 24 degrees west to north 44 degrees west, or 20 degrees.

The western edge of the oil field is similar in character to that of Crawford county, in that it is almost abrupt and uniform, except for a small detached area in sections 20, 29 and 30, Bridgeport township. This extension of the field is due to a small terrace on the western slope of the anticline, indicated later in one of the cross-sections. The eastern edge of the field, like that of Crawford county, is very irregular and is probably due to the flattening of that side.

The Lawrence county field is the richest of the eastern Illinois fields. It has produced more large wells than the rest of the fields combined and its wells have maintained steadier production than those of any other locality in the State. This field is prominent because of its large number of producing sands ranging in depth from 800 to 1,900 feet, or from the top of the Pottsville rocks in the Pennsylvanian series to the top of the hard and thick St. Louis limestone of the Mississippian series. There is a shallow sand at about 450 feet that produces oil but its distribution is limited to a very small area in sections 2 and 3, Dennison township. The other producing sands are in order of depth, the three Bridgeport lenses, Buchanan, "Gas," Kirkwood, Tracey and McClosky sands.

DETAILED STRUCTURE OF THE DISTRICT.

THE "SHALLOW" SAND.

A shallow sand is productive in sections 2 and 3, T. 2 N., R. 12 W. It lies at a depth of from 444 to 485 feet or from 25 feet above sea level to about 17 feet below. The initial production was light, averaging about 12 barrels per day. This sand is thought to be the equivalent of a shallow sand in section 27, Martin township, Crawford county and possibly of one of the Clark county sands. Further details of the sand are found in the tables of well data.

BRIDGEPORT SAND.

The Bridgeport sand derived its name from the town of Bridgeport near the middle of the Lawrence county field. The first well in this field and in this sand was drilled by the Big Four Oil Company in July, 1906, on a narrow strip of land north of the Baltimore, Ohio and Southwestern Railroad and south of the public road in Bridgeport. At the same time that the well was drilled the land belonged to the town of Bridgeport.

The Bridgeport sand is widely developed both north and south of the town. The initial productions of the sand are good. This fact, together with the shallow depth at which the oil is found, attracted attention to the field as a very promising area for exploration. The sand is found over the whole field but is especially productive of oil in sections 31, 32, 5, 6, 7, 8 and 17, Bridgeport township. It is productive of good pressures of gas and some oil in sections 34, 35, 3 and 2, Dennison township.

The Bridgeport sand is lenticular and closely resembles the Robinson sand. In fact it seems to correspond to that sand in position and physical features as shown in the discussion of the stratigraphy of the two counties, page 83. This sand comprises three general lenses and some smaller ones in several parts of the oil field. The depths of the sands vary between 600 and 1,000 feet. Thus a range of depth is due to a sharp uplift of the LaSalle anticline and to the irregularity in the surface. It is impossible to average the thickness of the lenses for the whole of the county, so great is their variability. Some of the lenses are but a few feet thick and others are over 300 feet through. North of Bridgeport they average about 35 feet. In the other areas of good production, the pay lenses have a wide range of thickness. It is also impossible to average the interval between lenses because of the wide difference over the field. The records in many instances show that the lower lenses of the Bridgeport sand merge into the massive sandstone that is characteristic of the Buchanan or basal portion of the Pottsville rocks.

No attempt was made to show the structure of this horizon by means of contours or cross-sections because of the uncertainty of correlation. Moreover the lack of sufficient detailed logs also prohibited any general conclusions as to the distribution of the sand. The oil and salt water relations are discussed later.

BUCHANAN SAND.

The Buchanan sand is the next producing sand lower than the Bridgeport. It was first discovered in September, 1906, by the Ohio Oil Company on the R. O. Buchanan farm in the S. $\frac{1}{2}$ S. E. $\frac{1}{4}$ Sec. 16, Lawrence township. The pay was found at 1,332 feet. The type area for the sand lies in sections 15 and 16 Lawrence township; sections 21 and a portion of 22, Dennison township; and sections 17 and 20 of Bridgeport township. Data of the sand are very scattered over the rest of the field. There are enough facts known, however, to show the general structure up to and including sections 24, 19 and 20, Petty township. The information north of these sections is scant and unreliable because of the association of the Buchanan sand with the upper Bridgeport lenses.

The Buchanan sand comprises the basal part of the Pottsville rocks and is characterized by thick or massive sandstones over most of Illinois. These rocks mark the lowest portion of the Pennsylvanian series and lie unconformably on the Chester or upper division of the Mississippian rocks. Most of the well data in the tables indicate shallow penetration into this sand, which was tapped and entered a short distance in order to provide for a sufficient and safe shot. The oil zone is usually underlain with salt water, which, if tapped, offers danger of drowning the oil. In some localities of the State this sand is called the "Salt sand" because saturated with salt water. This sand has been one of the most prolific producers of oil in the Illinois fields. Its wells have yielded large quantities of oil and but little gas.

DETAILED STRUCTURE.

The altitudes of the top of the Buchanan sand were assembled and contoured in Plate VII. In some localities of the field wells giving data were so far apart that it was not justifiable to draw definite contour lines. The dashed lines were substituted to indicate the approximate structure.

The general structure of the Buchanan sand reveals a very irregular surface. The type area of the sand is the most completely drilled. Data from this locality shows two small, symmetrical, domes, one in section 17, Bridgeport township and the other in sections 15 and 16, Lawrence township and section 21, Dennison township. The west dome (section 17) is 107 feet high. It is enclosed by the 640-foot contour line and covers about $1\frac{1}{4}$ square miles. The crest of the dome lies in the SW. cor., NE. $\frac{1}{4}$ sec. 17. The second dome is 99 feet high and is also enclosed by the 640-foot contour. It covers about 2 square miles of area. Its crest lies along the W. $\frac{1}{2}$ SW. $\frac{1}{4}$ sec. 15, Lawrence township.

The sand dips rapidly from the first dome in the type area toward the southwest. From the crest of this dome to Bport., sec. 30 SE., No. 3, the dip is 262 feet in about $2\frac{1}{2}$ miles or at the rate of 105 feet per mile. This rapid dip merges into a minor terrace in the lower sands in the NW. cor., sec. 29, but is not shown for the Buchanan sand.

The structure is very irregular east and south of the type area of the Buchanan sand. The contours range from 600 to 760 feet. They show

a general dip to the east. The west side of this part of the field is high structurally but unproductive.

The Buchanan sand dips sharply north of the type area and then gradually rises into an uplift of the main axis of the LaSalle anticline that has the appearance of a narrow double plunging anticline. The apex of this dome-like structure lies near the center of section 30, Petty township. The rise to the north from Bport., sec. 17, NE., No. 15 to Pet. sec. 30, SE., No. 66 is 368 feet in $3\frac{3}{8}$ miles, or at the rate of 108 feet per mile. The sides of the dome dip very steep to the west and east from its apex, with the steeper slope to the west. The dip along the C-C cross-section from Pet. sec. 30, SE., No. 66 to Bport. sec. 36, SE., No. 3 is 328 feet in $1\frac{1}{8}$ miles, or at the rate of about 290 feet per mile. The dip east from the crest of the dome to Pet. sec. 20, SE., No. 7 along the same cross-section is 223 feet in $1\frac{1}{4}$ miles, or at the rate of 178 feet per mile. The western side of the dome dips 112 feet more per mile than the eastern side. This is in keeping with the nature of the LaSalle fold exposed near LaSalle. The structure contours reveal a rapid plunge of the sand from the dome to the north and then a rise into a second dome with a crest 22 feet lower than the major uplift. The dip from the crest of the first dome to Pet. sec. 30, NE., No. 22, at the bottom of the basin, is 123 feet in about one-half of a mile. The rise from the bottom of the basin to Pet. sec. 19, SE., No. 38, the crest of the second dome, is 101 feet in about three-fourths of a mile. The contours indicate a uniform dip northward from the second dome. The dip of this sand along the western side of the anticline is uniform.

A small though conspicuous terrace interrupts the long sweeping rise from the type area of the Buchanan sand into the dome in Petty township. It lies in sections 7 and 8, Bridgeport township along the 700-foot contour. The area covers about one-half of a square mile. The wells yielded good initial productions of oil.

"GAS" SAND.

The "Gas" sand is so named because it produces small amounts of gas wherever encountered, though in some instances it is productive of oil. The sand underlies the Buchanan sand and is usually the first or second sand in this district penetrated in the Mississippian or, specifically, the Chester rocks. There are 36 wells in the area that furnish data for both Buchanan and "Gas" sands and from these the average interval between these sands is found to be 198 feet.

The sand is definitely correlated from section 36, Petty township to sections 5 and 6, Bridgeport township. Without detailed knowledge of the plunging anticline in section 30, Petty township or the stratigraphy of the area, the oil men have confused the "Gas" sand with the upper sands, particularly with the Buchanan bed, and in some instances with the Kirkwood sand beneath. The relations of this sand to the others of the region are geographically shown in cross-sections A-A, B-B, and C-C.

The average thickness of the "Gas" sand estimated from data furnished by 245 wells is 16 feet with a range from 1 to 68 feet.

The "Gas" sand produces gas over most of the contoured area. The amounts were not reported.

DETAILED STRUCTURE.

The altitudes of the top of the "Gas" sand were assembled and contoured in Plate VIII. The structure of this sand is the most regular of any in this field, with the exception of the Kirkwood. The contours indicate a uniform dip of the sand along the east and west flanks of a strongly defined anticline. The structure further confirms the double plunging of the major fold both to the north and south. The highest point of the anticlinal dome is in Pet., sec. 30, NE., No. 5. The dip to the north from this point to Pet., sec. 36, NW., No. 12, is 232 feet in slightly over 5 miles or at the rate of about 46 feet per mile. The decline to Bport., sec. 17, NE., No. 39, is 246 feet in $4\frac{3}{8}$ miles or at the rate of about 56 feet per mile. The western dip from the crest to Bport., sec. 36, SE., No. 8, is 321 feet in $1\frac{3}{4}$ miles or at the rate of 183 feet per mile. The dip eastward from the crest to Pet., sec. 29, NE., No. 7, is 210 feet in seven-eighths of a mile.

The two lowest points along the western flank of the anticline conform to the 440-foot contour. The field is bounded by the 500-foot contour on the west and the 600-foot contour on the east. The contours south of the north line of sections 5 and 6, Bridgeport township, were broken because the data was scattered and somewhat indefinite.

KIRKWOOD SAND.

The Kirkwood sand was first developed in 1907 by the Burton Bros. Oil Company on the Thomas Kirkwood farm in the E. $\frac{1}{2}$ NE. $\frac{1}{4}$ sec. 14, Lawrence township, now known as the R. M. Kirkwood farm and operated by the Bridgeport Oil Company. This sand is the most widely developed and productive of any in the Lawrence county field. It extends from section 36, Petty township, to section 8, Dennison township and spreads into all outlying pools, thus indicating the shape and extent of the Lawrence county field.

The Kirkwood sand is the most widespread sand that is productive of oil in the Illinois basin. It is the equivalent of the Sparta sand of Randolph county, the Lindley gas sand of Greenville, the Carlyle oil sand of Clinton county, the Benoist sand of Marion county, and the Oakland City sand of Pike county, Indiana. This sand lies low in the Chester series and is usually overlain by a succession of shales, limestone, some sandstone, and at least two and often three red shales. The second red shale usually serves as its horizon marker as the red rock is easy to distinguish because it discolors the water used in drilling.

The Kirkwood sand is lenticular in some portions of the field. It is subdivided into two and often three thin lenses. The surface of the top lens, however, is uniform over the county and is taken as a basis of contouring.

The sand shows excellent initial productions and has promise of being long lived and steady in its yield. It is the most reliable of all the sands. There is little or no gas yield from it except close to the

northern limits of the county. The oil is a "sweet" oil containing a small percentage of sulphur and has about 36° gravity, Beaume.

There are three areas in the field where this sand is especially productive. The type locality includes sections 11, 12, 14, 15, Lawrence township and sections 22, 23, 25, 26 and 36, Dennison township. The next important area lies about the anticlinal dome spoken of under the discussion of the upper sand beds of the field, page 107. This area includes sections 19, 20, 29 and 30, Petty township, and sections 6, 31, 32 and 36, Bridgeport township. A less important area is well developed in parts of sections 7, 8, and 17, Bridgeport township.

Data from 220 wells in the Lawrence county field indicate an average interval of 67 feet between the Kirkwood and "Gas" sands in the upper part of the field, and 243 wells indicate an average interval of 265 feet between the Kirkwood and Buchanan sands in its lower part, where the "Gas" sand is not correlated. The average interval between the Kirkwood and "Gas" sands in 157 wells in Petty township is 63 feet. There are 63 wells in the northern part of Bridgeport township that show an average interval of 78 feet between the two sands. The range of interval lies between 26 and 134 feet.

The intervals between the Kirkwood and Buchanan sands were calculated for that portion of the field south of Petty township. Those in Petty township were not averaged because of the uncertainty of correlation of the Buchanan sand.

There are 85 wells in Bridgeport township that show an average interval of 255 feet between the two sands; 57 wells in Lawrence township with an interval of 244 feet; and 101 wells in Dennison township with an average interval of 287 feet. The interval therefore seems to increase toward the southern end of the field. There are eight wells on the terrace in sections 20, 29 and 30, Bridgeport township that show an average interval of 450 feet between the sands. This seems to indicate a rapid thickening of the formations as they dip west into the Illinois basin, adjacent to the LaSalle anticline. The wells in the eastern extension of the field in sections 11 and 12 of Lawrence township indicate a lessening of interval between the sands and an average of about 200 feet.

The thickness of the Kirkwood sand is very irregular over the field. It is found to average about 30 feet in those wells that pass through the sand.

DETAILED STRUCTURE.

The altitudes of the top lens of the Kirkwood sand were assembled and contoured in Plate IX. The contours on this sand give a most complete and satisfactory idea of the structure of the LaSalle fold. The information was abundant and widely distributed.

The upper part of the field from sections 35 and 36, Petty township, to and including sections 7 and 8, Bridgeport township, shows an elongated dome or double plunging anticline. The actual top of the dome lies around Pet. sec. 30, SE., No. 55. The sand dips in four directions from this well. The general crest lies within the 680-foot

contour and has an areal extent of about 80 acres. A part of it overlaps into section 29, Petty township. The sand dips 240 feet northward along the A-A cross-section, between the crest and Pet. sec. 35, NE., No. 2, a distance of $5\frac{3}{4}$ miles. The rate of dip is 41 feet per mile. The dip to the east along the C-C cross-section to Pet. sec. 20, SE., No. 10, is 219 feet in $1\frac{1}{8}$ miles or 194 feet per mile. The dip to the west along the same cross-section to Bport. sec. 36, SE., No. 8, is 342 feet in $1\frac{1}{2}$ miles or at the rate of 228 feet per mile. The southward dip of the sand through the center of the field to Den. sec. 22, NW., No. 5, is 335 feet in $5\frac{1}{4}$ miles or at the rate of 63 feet per mile.

The dome-like structure merges into a mild trough in sections 4, 9, 10, Lawrence township, and sections 21 and 22, Dennison township. The sand then lies flat to the south through Lawrence and Dennison townships forming a broad plateau-like crest of the major fold. The sand lies at a uniform level at about the 400-foot contour. The sands on both sides of the field and to the south dip toward the limbs of the major fold. The southern limits of the field seem to gradually drop lower than the producing zone of the sand. Whether the major fold continues to drop, until it merges into the southeastern side of the eastern interior coal basin or whether the drop is local, as seems to be the case between Crawford and Lawrence counties, is not known. At any rate the anticline loses much of its identity as a structural fold, thus suggesting its mergence into the rim of the basin.

The terrace in sections 20, 29 and 30, Bridgeport township, previously spoken of, is prominently shown by the Kirkwood sand contours. It seemingly covers an areal extent of about 240 acres and lies between the 100 and 120-foot contours. This is about 300 feet lower than the producing sand in the Kirkwood area of Dennison township, three miles east. Further drilling will possibly extend production until the area will cover several times its present extent.

TRACEY SAND.

The Tracey sand was first developed in 1908 by Busch and Everett in the R. J. Tracey farm in the NW. $\frac{1}{4}$, NE. $\frac{1}{4}$, sec. 13, Lawrence township. This sand is not found widely productive of oil. The type localities lie in sections 11 and 14, Lawrence township; sections 25 and 26, Dennison township; and sections 19 and 30, and sections 25, 26, 35 and 36, Petty township.

This sandstone is soft and calcerous. It overlies the Ste. Genevieve and massive St. Louis limestones, which the oil men often call the "big lime." The Tracey sand lies in the basal portion of the Tribune formation and does not correspond to the Cypress sandstone, as has been suggested by the author in his earlier studies of the stratigraphy of the area.¹

Data from 194 wells over the entire field indicate an average interval of 114 feet between the Kirkwood and the Tracey sands. The average interval for each of the townships is shown in the following table:

¹ Economic Geology, Vol. VII, No. 6, September, 1912, p. 579

Intervals Between Kirkwood and Tracey Sands.

Township.	Number of wells giving data.	Average interval between the Kirkwood and Tracey sands in feet.
Dennison.....	65	105
Lawrence.....	21	111
Bridgeport.....	30	118
Petty.....	78	120

The interval seems to widen as the sands dip into the limbs of the anticline. The interval in Pet. sec. 15, NE., No. 1, is 160 feet and in Pet. sec. 23, NE., No. 1, 210 feet. The intervals lessen to the north to about 40 feet. This fact is borne out by the A-A cross-section.

The Tracey sand yields excellent pressures of gas in the northern half of the field. The gas has a rank odor in consequence of its large sulphur content, and the oil is "sour." This sand is so closely associated with the underlying limestones that its oil and gas probably had its origin from them.

DETAILED STRUCTURE.

The altitudes of the top of the Tracey sand were assembled and contoured on Plate X. The data were too scattered to warrant well defined contouring, hence many of the contour lines are broken to indicate merely the general trend of the structure. Only the type localities mentioned above justified continuous contour lines. The structure of the sand closely resembles that of the overlying Kirkwood except that the dips are not so pronounced. As with the other sands, the Tracey conforms to the dome-like structure in Petty township. The crest of the dome lies at Pet. sec. 30, SE., No. 63. The dip northward to Pet. sec. 26, NE., No. 2, is 247 feet in $6\frac{5}{8}$ miles or at the rate of 37 feet per mile. The sand appears very flat in parts of sections 12, 13, and all of 18, about $1\frac{1}{2}$ miles north of the apex of the dome. The fold dips equally about 240 feet to both sides of this flat. The dip south from the apex of the dome to Law. sec. 10, SW., No. 1, is 283 feet in $3\frac{7}{8}$ miles or at the rate of 73 feet per mile. The Tracey, like the Kirkwood horizon, assumes a plateau-like nature on the crest of the anticline to the south of the last mentioned well.

McCLOSKEY SAND.

The McClosky sand was developed by the International Oil and Gas Company on the M. McClosky farm in the NW. $\frac{1}{4}$ SE. $\frac{1}{4}$ section 25, Dennison township. The type locality for this sand lies in sections 25 and 36, Dennison township. It is also productive at the same level in sections 11, 12, 13 and 14, Lawrence township. This formation is extensively developed in a long narrow strip beginning in the NE. $\frac{1}{4}$ section 6, Bridgeport township and extending through the middle of the field into section 19, Petty township. The McClosky sand is widely developed in the northern end of the field in sections 1, 7, 11, 12, 13, 18, 25, 35 and 36, Petty township.

The McClosky sand is a soft oolitic limestone known as the Ste. Genevieve. This limestone underlies the Cypress and Chester rocks and overlies the massive and hard St. Louis limestone. The contact between the overlying Chester and the Ste. Genevieve in Lawrence county is well defined but the lower portion of the Ste. Genevieve merges into the St. Louis. In many places the two limestones can be distinguished only by the difference in their hardness and the presence of oolites in the Ste. Genevieve.

Data from 150 wells in the Lawrence county field show an average interval of 104 feet between the McClosky and Tracey sands. The average interval in each of the townships is shown in the following table:

Intervals Between Tracey and McClosky Sands.

Township.	Number of wells giving data.	Average intervals between the Tracey and McClosky sands in feet.
Dennison.....	43	113
Lawrence.....	14	118
Bridgeport.....	15	105
Petty.....	78	96

The interval widens perceptibly as the sand dips into the limbs of the anticline. The interval in Pet. sec. 15, NE. No. 1, is 174 feet and in Pet. sec. 23, NE., No. 1, is 175 feet.

The McClosky sand has yielded the largest initial productions of any of the producing sands in Illinois. It is not widely developed because of the large expense incurred in drilling. The wells in the northern section of the field have been good producers and have yielded some gas. The oil and gas have a large sulphur content. The southern part of the field has yielded several oil gushers and but one or two gas wells. The oil has a much smaller sulphur content than that from the northern portion of the field.

DETAILED STRUCTURE.

The altitudes of the top of the McClosky sand were assembled and contoured in Plate XI. The contours reveal one major and three minor domes along the crest of the anticline. The first dome lies at the northern boundary of the county, in sections 25 and 36, Petty township. It falls within the 320-foot contour. The top of the dome covers about three-fourths of a square mile.

The sand dips from this dome into a basin about 90 feet deep and then gradually rises into a terrace through sections 12, 13, 18 and 19, Petty township. The terrace merges rapidly into the major dome of the fold in section 30, Petty township. The top of the dome lies at Pet. sec. 30, SE., No. 59. The dip from the apex eastward to Pet. sec. 20, SE., No. 10, is 164 feet in $1\frac{1}{8}$ miles, or at the rate of 145 feet

per mile. The dip westward to Bport. sec. 31, SW., No. 5, is 218 feet in $1\frac{1}{8}$ miles, or at the rate of 193 feet per mile. The west dip of the fold is 45 feet greater than the east dip for the same distance. There are two very small domes or sharp pinnacles in the sand immediately south of the major uplift. The crests of these lie at Pet. sec. 32, SW., Nos. 10 and 17. The sand lies at 413 and 418 feet respectively above the assumed datum plane of 1,500 feet below sea level or only 27 feet below the top of the largest dome.

The data are scanty along the sides of the main anticline and therefore the contours are dashed. They show strong dips to both sides of the field and a long gentle dip to its southern end. The structure of the sands in the southern half of the field is very similar to that of the Kirkwood and Tracey sands. The crest of the anticline merges from the major dome into an extensive flat area which lies uniformly around the 160-foot contour.

CROSS-SECTIONS.

GENERAL STATEMENT.

Four cross-sections were constructed along lines that pass through and across the Lawrence county field. They were chosen especially with respect to the structure of the area, as it is desired to show the nature of the crest of the LaSalle anticline as well as the flanks. The sections were also chosen along lines that pass through or near a large number of wells.

The cross-sections were constructed by plotting records with respect to sea level. A line representing sea level was drawn, and another representing an ideal surface 500 feet above it. This is marked off to correspond with the points where the line crosses section or township lines. The names of the townships are placed in their proper positions. The records of the wells were located with respect to their position along the line and above sea level. They were then plotted with uniform symbols and scale. Wherever the cross-section line cut a contour-line the altitude of the contour was marked with a cross and set in its proper position. Correlation lines were then drawn through all crosses representing the altitude of a particular sand and between similar formations in detailed records. Since a datum plane 1,500 feet below sea level was used to make the contouring read positive this line is drawn on the sections merely to emphasize its use. The position of any sand can be measured directly above the datum plane line and the figures thus obtained should correspond with those obtained from the structure maps and those recorded in the tables of well data.

CROSS-SECTION A-A.

The A-A cross-section, Pl. XII, presents the structure of the sands along the crest of the anticline and through the middle of the entire Lawrence county field. As a whole the section is especially valuable since it shows the double plunging anticline, the crest of which lies in section 30, Petty township, the convergence of the sands at the northern end, and the dip from the dome into the flat at the southern end of the

field. The sands are shown to be generally parallel with local irregularities that seem due, in most cases, to the thinning and thickening of the sand. All sands conform to a mild basin at the foot of the elongated dome in sections 9 and 16, Lawrence township.

LOGS.

The section is made up from many skeleton logs which are found in the tables of well data. The detailed logs are presented below.
The records of the following wells are found in the tables:

List of Wells in Lawrence County Furnishing Data for Cross-Section A-A.

Township.	Section.	Quarter-section.	Well number.
Petty.....	26.....	NE.	1
	26.....	SE.	4
	35.....	NE.	2
	36.....	NW.	11
	36.....	SW.	5
	36.....	SW.	6
	12.....	NE.	4
	12.....	NE.	5
	12.....	NE.	6
	12.....	NE.	14
	12.....	NE.	12
	12.....	SE.	10
	12.....	SE.	9
	18.....	NW.	17
	18.....	NW.	16
	18.....	NW.	15
	18.....	SW.	1
	18.....	SW.	3
	19.....	NW.	3
	19.....	NW.	4
	19.....	NW.	5
	19.....	NW.	6
	19.....	SW.	21
	19.....	SE.	19
	19.....	SE.	16
	19.....	SE.	14
	19.....	SE.	3
	30.....	NE.	13
	30.....	NE.	15
	30.....	NE.	26
	30.....	SE.	60
	30.....	SE.	59
	30.....	SE.	69
	30.....	SE.	76
Bridgeport.....	32.....	NW.	35
	32.....	NW.	33, 34
	32.....	SW.	23
	32.....	SW.	26
	5.....	NW.	9, 10
	5.....	NW.	4
	5.....	NE.	10
	5.....	NE.	9
Lawrence.....	5.....	SE.	15
	9.....	SW.	15
	9.....	NE.	4
	15.....	NW.	12
	15.....	NW.	11
	15.....	NW.	7
	15.....	SW.	22
	15.....	SW.	20
Dennison.....	15.....	SE.	1
	22.....	NE.	4
	22.....	NE.	8
	23.....	SW.	1
	23.....	SW.	5
	26.....	NW.	1
	26.....	NE.	14
	26.....	NE.	10
	26.....	SE.	15

List of Wells in Lawrence County—Concluded.

Township.	Section.	Quarter-section.	Well number.
Dennison— <i>Concluded.</i>	25.....	SW.	2
	25.....	SW.	3
	36.....	NW.	2
	36.....	NE.	13
	36.....	SE.	19
	36.....	SE.	16
	36.....	SE.	9
	6.....	NW.	5
	6.....	NW.	4
	6.....	SE.	1
	8.....	NW.	1
	8.....	NW.	2

The following logs are those shown in detail in the cross-section and briefly referred to in the tables:

Pet. sec. 36, SW., No. 8.

Operator—Snowden Bros.

Farm and well—Petty, No. 1.

Elevation—436 feet.

	Thickness Feet	Depth Feet
Sand and gravel, loose	112	112
Slate, blue, soft	68	180
Limestone, gray, hard (3 bailers water, 190 feet)	10	190
Slate, brown, soft	110	300
Limestone, yellow, hard	6	306
Slate, blue	10	316
Slate, brown, hard	124	440
Slate, black, soft	10	450
Coal	4	454
Shells	15	469
Slate, white, hard	55	524
Shell, blue, hard	5	529
Coal	5	534
Slate, blue, soft	56	590
Shale, white, hard	15	605
Shale, brown, soft	85	690
Slate, black, soft	10	700
Slate, blue, soft	10	710
Slate, brown, hard	15	725
Limestone, white, hard	10	735
Shale, white, soft	10	745
Limestone, blue, hard	20	765
Shells, hard	15	780
Limestone, red, soft	5	785
Slate, blue, soft	10	795
Limestone, blue, hard (2 bailers water, 800 feet)	5	800
Slate, blue, soft	15	815
Limestone shells, gray, hard	20	835
Slate, black	35	870
Sand, white (10 bailers water per hour, 885 feet)	15	885
Slate and shells, blue	35	920
Sand (hole full of water, 980 feet)	60	980
Slate, blue, soft	25	1,005
Sandy shale, brown	90	1,095
Sand, white, soft	8	1,103
Slate, black	10	1,113
Sand, gray, hard	62	1,175
Slate, black	10	1,185
Sand, white	35	1,220
Slate, brown, soft	20	1,240
Sand, loose	15	1,255
Slate, light brown, soft	5	1,260
Limestone, hard	5	1,265
Sand, white, hard	10	1,275
Limestone, gray, hard	10	1,285
Slate, blue, soft	13	1,298
Sandy limestone	28	1,326
Oil sand	10	1,336

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, blue, soft.....	10	1,346
Limestone, yellow, hard.....	20	1,366
Oil sand, white, soft.....	26	1,392
Limestone, gray.....	8	1,400
Sand, white, oil.....	12	1,412
Slate, blue, soft.....	10	1,422
Total depth.....		1,422
Initial production, 125 bbls.		

Pet. Sec. 36, SW., No. 10.

Operator—Snowden Bros.
Farm and well—Petty, No. 3.
Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand, white, soft.....	100	970
Slate, blue, soft.....	130	1,100
Limestone, light, hard.....	15	1,115
Sand, white, hard.....	100	1,215
Slate, blue, soft.....	10	1,225
Limestone, gray, hard.....	5	1,230
Sand, white, hard.....	15	1,245
Slate, white, soft.....	5	1,250
Limestone, light, hard.....	30	1,280
Slate, white, soft.....	5	1,285
Limestone, light, hard.....	20	1,305
Slate, light brown, soft.....	5	1,310
Sand, hard (oil 1,328 to 1,332 feet).....	22	1,332
Slate, light brown.....	15	1,347
Limestone, gray, hard.....	17	1,364
Slate, blue, soft.....	3	1,367
Sand, white, soft (oil 1,375 to 1,387 feet).....	20	1,387
Slate, blue, hard.....	5	1,392
Limestone, hard.....	10	1,402
Sand, white, soft.....	12	1,414
Limestone, blue, hard.....	21	1,435
Total depth.....		1,435

Pet. sec. 1, NW., No. 3.

Operators—Snowden Bros.
Farm and well—Drole, No. 7.
Elevation—435 feet.

	Thickness Feet	Depth Feet
Clay, soft.....	18	18
Sand and gravel, soft.....	96	114
Slate, soft.....	108	232
Sand, hard.....	10	242
Shell, hard (water).....	23	265
Slate, white, hard.....	95	360
Slate, dark, hard.....	60	420
Shell, hard.....	5	425
Coal.....	6	431
Slate, light, soft.....	269	700
Shell, light, hard.....	25	725
Slate, light, dark, red and blue, soft.....	90	815
Sand, hard (water).....	25	840
Slate, light, soft.....	10	850
Sand, white, loose.....	45	895
Slate, light, soft.....	5	900
Sand, white, hard.....	63	963
Slate, light, soft.....	50	1,013
Slate, dark, hard.....	40	1,053
Limestone, gray, hard.....	7	1,060
Slate, light, soft.....	50	1,110
Sand, gray, loose (water, 1,150 to 1,240 feet).....	40	1,150
Sand, white, hard.....	90	1,240
Limestone, gray, hard.....	30	1,270

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark.....	20	1,290
Slate, light, loose.....	28	1,318
Oil sand, gray, loose.....	8	1,326
Slate, dark, hard.....	12	1,338
Limestone, gray, hard.....	25	1,363
Sand, white, loose.....	12	1,375
Slate, black, hard.....	9	1,384
Sand, white, hard.....	18	1,402
Oil sand.....	10	1,412
Slate, dark, hard.....	2	1,414
Limestone, gray, hard.....	17	1,431
Total depth.....	.....	1,431

Pet. sec. 1, SW., No. 5.

Operators—Snowden Bros.

Farm and well—Piper, No. 9.

Elevation—435 feet.

	Thickness Feet	Depth Feet
Soil	18	18
Mud, blue, soft.....	4	22
Slate, light, soft.....	34	56
Sand, white, soft (water).....	2	58
Slate, light, soft.....	57	115
Coal	2	117
Slate, light, soft.....	123	240
Limestone, white, soft.....	6	246
Slate, white, soft.....	59	305
Slate, black.....	20	325
Slate, white.....	30	355
Limestone, white, hard.....	8	363
Slate, white, soft.....	15	378
Slate, black.....	32	410
Slate, light.....	10	420
Coal	3	423
Limestone, white, hard.....	3	426
Slate, black, soft.....	42	468
Sand, white, soft.....	7	475
Coal	4	479
Slate, white.....	21	500
Slate, brown.....	52	552
Slate, white.....	20	572
Sand, white, hard.....	6	578
Slate, white, soft.....	17	595
Slate, brown.....	45	640
Slate, black.....	12	652
Slate, light.....	33	685
Limestone, white, hard.....	5	690
Sand, white, hard.....	10	700
Slate, white, loose.....	10	710
Slate, brown, loose.....	40	750
Limestone, white, hard.....	10	760
Slate, white, soft.....	5	765
Slate, black.....	30	795
Limestone shell, hard.....	10	805
Sand, brown, open.....	11	816
Shale	8	824
Sand, white.....	15	839
Limestone, gray.....	12	851
Sand, white.....	122	973
Slate, black.....	41	1,014
Limestone shell, hard.....	5	1,019
Slate	120	1,139
Sand, white, soft.....	68	1,207
Limestone shell, hard.....	28	1,235
Red rock.....	10	1,245
Slate, black.....	7	1,252
Limestone, white, hard.....	23	1,275
Slate, black.....	25	1,300
Sand, gray.....	12	1,312
Slate, black.....	14	1,326
Total depth.....	.....	1,326
Initial production, 90 bbls.		

*Logs—Continued.**Pet. sec. 30, NE., No. 9.*

Operators—Bridgeport Oil Company.

Farm and well—Boyd, No. 11.

Elevation—452 feet.

	Thickness Feet	Depth Feet
Mud and slate.....	44	44
Limestone	6	50
Slate	20	70
Sand	20	90
Slate	55	145
Limestone	15	160
Slate	5	165
Sand	25	190
Slate	10	200
Limestone, hard.....	5	205
Slate	45	250
Sand	40	290
Slate	50	340
Coal	5	345
Slate	55	400
Limestone shell.....	10	410
Coal	5	415
Slate	100	515
Sand	5	520
Coal	3	523
Shale, brown.....	32	555
Sand	30	585
Slate	15	600
Limestone shell.....	8	608
Sand	64	672
Slate	28	700
Limestone shell.....	5	705
Slate	75	780
Limestone shell.....	5	785
Slate	45	830
Stray sand.....	13	843
Slate	33	876
Sand	4	880
Sand, broken.....	15	895
Oil sand (best oil, 933 to 950 feet).....	57	952
Total depth.....	.....	952

Pet. sec. 30, SE., No. 50.

Operators—Curtis and Akin.

Farm and well—Fitch, No. 17.

Elevation—475 feet.

	Thickness Feet	Depth Feet
First water at.....	.....	120
Red rock at.....	.....	217
Sand at.....	.....	612
Bottom of sand.....	78	690
Slate	34	724
Limestone shells.....	4	728
Sand (show of oil, 773 feet).....	124	852
Slate	53	905
Sand (oil, 945 feet).....	90	995
Slate	65	1,060
Sand	45	1,105
Sand and limestone.....	20	1,125
Red rock.....	1,159 to	1,166
Slate	4	1,170
Limestone	20	1,190
Slate	34	1,224
Sand (gas).....	4	1,228
Limestone	16	1,244
Slate	41	1,285
Red rock.....	15	1,300
Sand (oil, 1,340 feet).....	40	1,340
Slate	28	1,368

Logs—Continued.

	Thickness Feet	Depth Feet
Sand	20	1,388
Slate	10	1,398
Sand (little oil, best showing, 1,411 feet)	26	1,424
Total depth.....		1,424

Bport. sec. 32, NW., No. 23.

Operators—Snowden Bros.

Farm and well—Perkins, No. 28.

Elevation—511 feet.

	Thickness Feet	Depth Feet
Clay	20	20
Slate	80	100
Sand	60	160
Slate	109	269
Shell	6	275
Slate	75	350
Slate and shells.....	50	400
Slate	100	500
Limestone	8	508
Slate	72	580
Limestone	4	584
Slate	132	716
Limestone shells.....	4	720
Slate	45	765
Limestone shells.....	6	771
Slate	23	794
Sand	26	820
Slate	17	837
Limestone	10	847
Slate	8	855
Slate and shells.....	30	885
Sand and limestone (oil, 890 feet).....	5	890
Sand	25	915
Slate	60	975
Limestone	17	992
Sand	21	1,013
Shells	11	1,024
Sand	66	1,090
Slate	6	1,096
Limestone	29	1,125
Slate	15	1,140
Limestone	16	1,156
Slate	9	1,163
Limestone	14	1,177
Slate	33	1,210
Red rock.....	6	1,216
Slate	20	1,236
Shells	24	1,260
Limestone	4	1,264
Slate	19	1,283
Limestone (little gas, 1,290 feet).....	32	1,315
Slate	6	1,321
Gas sand (gas, 1,322 feet).....	9	1,330
Slate	15	1,345
Red rock.....	6	1,351
Slate	15	1,364
Oil sand (oil, 1,370 to 1,384 feet).....	22	1,386
Slate	12	1,400
Sand	12	1,412
Slate	50	1,462
Oil sand (oil, 1,468 to 1,482 feet).....	28	1,490
Slate	7	1,497
Limestone	8	1,505
Total depth.....		1,505

Bport. sec. 32, NW., No. 19.

Operators—Snowden Bros.

Farm and well—Perkins, No. 22.

Elevation—488 feet.

Logs—Continued.

	Thickness Feet	Depth Feet
Clay	23	23
Slate	52	75
Sand (water, 135 to 150 feet).....	75	150
Slate	25	175
Sand	70	245
Slate	4	249
Limestone shells.....	6	255
Slate, red.....	5	260
Slate	125	385
Sand	10	395
Slate, dark.....	30	425
Slate, light.....	40	465
Slate, dark.....	20	485
Sand shells.....	5	490
Slate, dark.....	180	670
Slate, light.....	23	693
Limestone shells.....	12	705
Slate	25	730
Slate and shells, light.....	55	785
Slate and shells, dark.....	43	828
Sand	22	850
Slate	20	870
Sand	30	900
Slate	45	945
Sandy limestone.....	40	985
Sand	28	1,013
Total depth.....		1,013

Bport. sec. 32, SW., No. 5.

Operators—Snowden Bros.

Farm and well—Perkins, No. 17.

Elevation—479 feet.

	Thickness Feet	Depth Feet
Clay	20	20
Slate	60	80
Sand	70	150
Slate	15	165
Sand	89	254
Limestone	6	260
Slate	5	265
Red rock.....	5	270
Slate	175	445
Sandy limestone.....	10	455
Slate	20	475
Limestone	5	480
Slate	10	490
Limestone	3	493
Coal	3	496
Limestone	7	503
Slate	87	590
Sandy shells.....	5	595
Slate	95	690
Sandy shells.....	10	700
Sand	10	710
Slate	32	742
Sand	6	748
Slate and shells.....	37	785
Sand	15	800
Slate and shells.....	45	845
Limestone	5	850
Sand	7	857
Slate	18	875
Sand	15	890
Slate	14	904
Sand and slate.....	6	910
Slate	10	920
Sand (oil, 925 to 935 feet).....	42	962
Slate	13	975
Limestone, gritty.....	45	1,020
Sand (oil, 1,045 feet; water, 1,050 feet).....	85	1,105
Slate	3	1,108
Sand	28	1,136

Logs—Concluded.

	Thickness Feet	Depth Feet
Slate	2	1,138
Sand	22	1,160
Slate	24	1,184
Limestone	3	1,187
Red slate.....	6	1,193
Slate and shells.....	27	1,220
Limestone	25	1,245
Slate and shells.....	13	1,258
Red slate.....	4	1,262
Sand (gas, 1,267 feet).....	28	1,290
Limestone	15	1,305
Red slate.....	25	1,330
Slate	20	1,350
Sand (oil, 1,351 feet).....	45	1,395
Slate	21	1,416
Sand and shells.....	14	1,430
Slate and shells.....	20	1,450
Sand (oil, 1,461 feet).....	10	1,460
Slate	15	1,475
Sand (gas, 1,490 feet).....	25	1,500
Slate and shells.....	40	1,540
Limestone and slate.....	30	1,570
Sand (gas, 1,580 feet).....	25	1,595
Limestone, gritty.....	45	1,640
Limestone and sand (show of oil, 1,695 feet).....	55	1,690
Sandy limestone.....	24	1,714
Total depth.....	.....	1,714

Bport. sec. 32, SW., No. 13.

Operators—Snowden Bros.

Farm and well—Perkins, No. 16.

Elevation—494 feet.

	Thickness Feet	Depth Feet
Sand (water).....	130	125 to 255
Limestone shell, very hard.....	10	270 to 280
Red rock.....	7	285 to 292
Coal	6	430 to 436
Coal	5	500 to 505
Limestone shell.....	7	710 to 717
Sand	5	720 to 725
Sand (show of oil, 805 feet).....	26	800 to 826
Oil sand (water, 880 feet).....	75	840 to 915
Sand, hole full of water.....	96	1,060 to 1,150
Slate and shells.....	9	1,156 to 1,165
Limestone	15	1,180
Slate	30	1,210
Red slate.....	5	1,215
Slate	20	1,235
Limestone	8	1,243
Slate	4	1,247
Limestone	11	1,258
Slate	14	1,272
Red slate.....	6	1,278
Slate	2	1,280
Sand (gas, 1,285 feet).....	20	1,300
Slate	5	1,305
Limestone	6	1,311
Slate	33	1,344
Red slate.....	6	1,350
Slate	6	1,356
Sand (oil, 1,378 and 1,398 feet).....	54	1,410
Slate	33	1,443
Sand (pay, 1,445 to 1,450 feet).....	17	1,460
Slate	19	1,479
Sand	14	1,493
Slate	10	1,503
Limestone	5	1,508
Total depth.....	.....	1,508
Production, 100 bbls.		

CROSS-SECTION B-B.

The B-B cross-section, Pl. XIII, shows the structure of the northern end of the field. It crosses the field diagonally between Pet. sec. 15, NE., No. 1, and Pet. sec. 30, SW., No. 1. The sands above the "Gas" sand were not correlated because of their irregularity. The lower sands show the major arch of this region to be about 250 feet high and three miles wide. The section is made up of the following records.

LOGS.

The records of the following wells are found in the tables of well data:

List of Wells in Lawrence County Furnishing Data for Cross-Section B-B.

Township.	Section.	Quarter-section.	Well number.
Petty.....	2.....	SE.	2
	2.....	SE.	7
	2.....	SE.	5
	2.....	NE.	6
	36.....	SW.	13
	36.....	SW.	1
	36.....	NE.	7
	36.....	NE.	6
	30.....	SW.	1

Pet. sec. 15, NE., No. 1.

Presented in the stratigraphic discussion, page 80.

Pet. sec. 2, SW., No. 6.

Operators—Snowden Bros.

Farm and well—Armitage, No. 2.

Elevation—445 feet.

	Thickness Feet	Depth Feet
Soil, yellow.....	33	33
Slate, dark.....	162	195
Sand, light.....	15	210
Slate, dark.....	35	245
Limestone, light.....	8	253
Slate, white, soft.....	25	278
Limestone, white.....	15	293
Slate, white, soft.....	17	310
Sand, light (7 bailers of water per hour, 345 feet).....	35	345
Slate and limestone shells, light, hard.....	11	356
Red rock.....	9	365
Slate, white.....	20	385
Sand, white.....	20	405
Slate, black, soft.....	75	480
Sand, light.....	15	495
Slate, light.....	25	520
Limestone, light.....	15	535
Slate and shells.....	30	565
Limestone, light, hard.....	12	577
Slate, black, soft.....	13	590
Limestone, white, medium.....	15	605
Slate, dark, soft.....	55	660
Sand, light.....	40	700
Slate, light, soft.....	100	800
Limestone, light, hard.....	7	807
Slate, dark, soft.....	12	819

Logs—Continued.

	Thickness, Feet	Depth Feet
Red rock.....	10	829
Limestone, white, hard.....	15	844
Sand, white.....	25	869
Slate, dark, soft.....	40	909
Limestone, white, hard.....	15	924
Sand, white.....	12	936
Slate, dark, soft.....	15	951
Sand, white.....	13	964
Sandy limestone, white.....	30	994
Slate and shells.....	146	1,140
Sand (hole full of water, 1,140 feet).....	30	1,170
Slate, black.....	5	1,175
Limestone shells and sand.....	20	1,195
Slate, dark, soft.....	45	1,240
Limestone shells, light.....	3	1,243
Slate and shells, light.....	42	1,285
Sandy limestone.....	15	1,300
Slate and shells.....	15	1,315
Limestone, light, hard.....	5	1,320
Slate and shells.....	115	1,435
Limestone, light, hard.....	5	1,440
Slate.....	18	1,458
Limestone, light, hard.....	22	1,480
Slate, white, soft.....	15	1,495
Red rock.....	10	1,505
Sand, light (show of oil, 1,505 feet).....	6	1,511
Slate and shells.....	24	1,535
Sand (oil, 1,555 feet).....	30	1,565
Slate.....	12	1,577
Limestone and sand (oil, 1,578 to 1,583 feet).....	20	1,597
Slate.....	13	1,610
Total depth.....	.....	1,610

Pet. sec. 2, SE., No. 10.

Presented in the stratigraphic discussion, page 81.

Pet. sec. 1, NW., No. 3.

Presented in the discussion of the A-A cross-section, page 117.

Pet. sec. 36, SW., No. 10.

Presented in the discussion of the A-A cross-section, page 117.

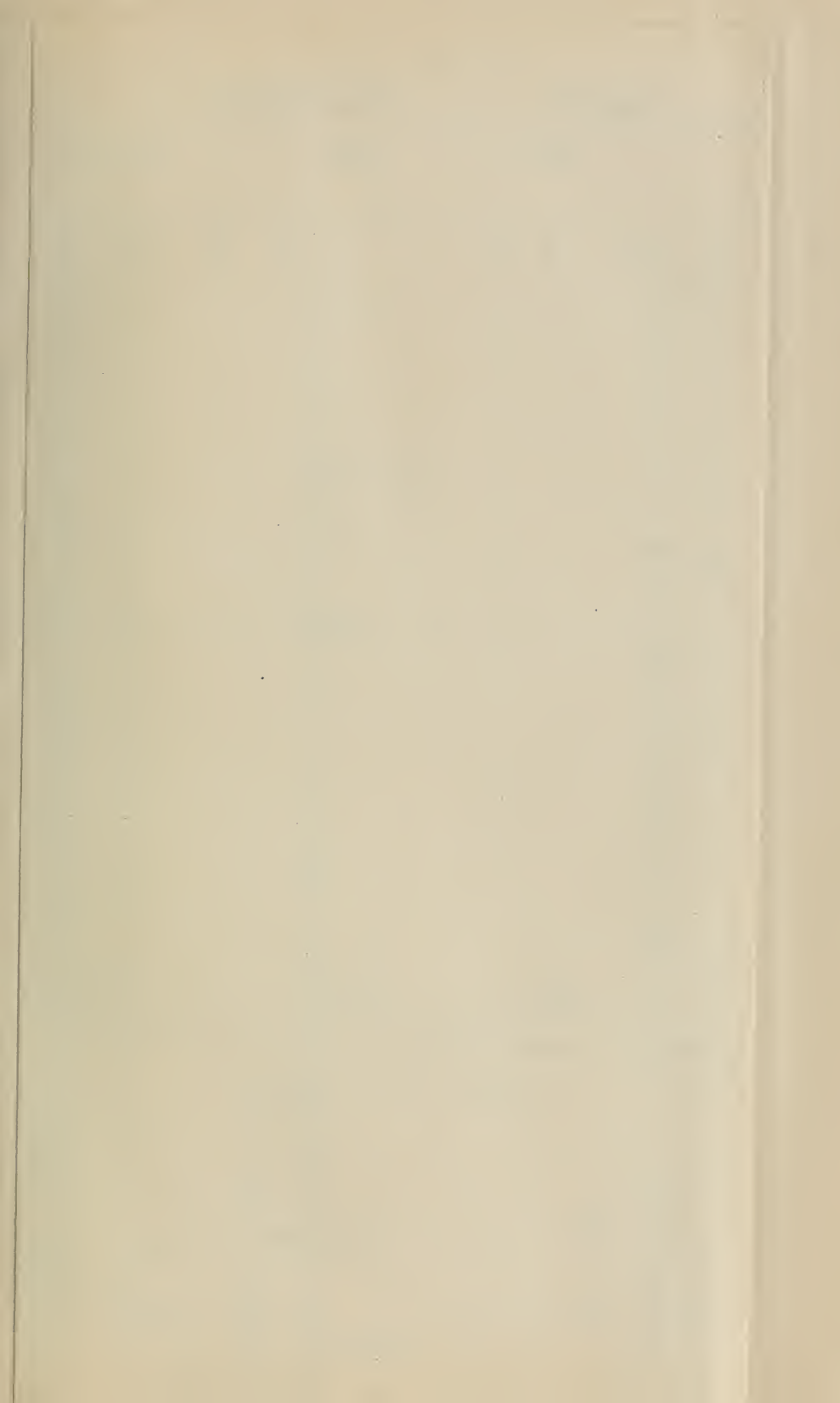
Pet. sec. 36, NE., No. 10.

Operators—Snowden Bros.

Farm and well—Nuttall, No. 5.

Elevation—435 feet.

	Thickness Feet	Depth Feet
Gravel, yellow, soft.....	180	180
Slate, black, soft.....	80	260
Limestone, white, hard (water).....	40	300
Sand, white, hard (12 bailers water, 305 feet).....	5	305
Red rock.....	5	310
Slate, white, soft.....	60	370
Limestone, white, hard.....	85	455
Sand, white, soft (water).....	45	500
Slate, white, soft.....	40	540
Slate, black, soft.....	25	565
Slate and limestone shells.....	70	635
Slate, black, soft.....	90	720
Sand, white, soft (water).....	25	750
Slate, white.....	35	785
Sand (hole full of water, 1,000 feet).....	215	1,000
Limestone, white, hard.....	95	1,095
Sand, white, hard.....	65	1,160



Red rock...
 Limestone, w
 Sand, white.
 Slate, dark,
 Limestone, w
 Sand, white
 Slate, dark,
 Sand, white
 Sandy limest
 Slate and sh
 Sand (hole
 Slate, black.
 Limestone s
 Slate, dark,
 Limestone s
 Slate and s
 Sandy limes
 Slate and s
 Limestone, l
 Slate and sl
 Limestone, l
 Slate
 Limestone,
 Slate, white
 Red rock..
 Sand, light
 Slate and s
 Sand (oil,
 Slate
 Limestone :
 Slate

Total d

Presente

Presente

Present

Operato

Farm 2

Elevati

Gravel, y
 Slate, bla
 Limestone
 Sand, wh
 Red rock
 Slate, wh
 Limestone
 Sand, wh
 Slate, wh
 Slate, bla
 Slate and
 Slate, bla
 Sand, wh
 Slate, wh
 Sand (hc
 Limeston
 Sand, w

Logs—Concluded.

	Thickness Feet	Depth Feet
Sand, slate, and shells, dark.....	50	1,210
Slate, white, hard.....	50	1,260
Sand, white, hard.....	35	1,295
Limestone, white, hard.....	15	1,310
Red rock.....	5	1,315
Limestone, white, hard.....	100	1,415
Slate, black, soft.....	19	1,435
Oil sand, gray.....	9	1,444
Slate, black.....	11	1,455
Sand, white (4 bailers of water, 1,465 feet).....	10	1,465
Slate.....	25	1,490
Limestone, white, soft.....	60	1,550
Limestone, yellow, hard (oil, 1,564 feet).....	15	1,565
Sandy limestone, white, soft.....	4	1,569
Sand, green oil, hard (first showing, 1,612 feet).....	53	1,622
Slate, black, soft.....	15	1,637
Total depth.....		1,637

CROSS-SECTION C-C.

The C-C cross-section, Pl. XIV, is chosen along a line crossing the crest of the large dome in section 30, Petty township. This cross-section presents the extreme structure of the Lawrence county field. It shows the arch to be about 400 feet high and three miles wide. Correlation lines of five sands are drawn over the dome and reveal some irregularities of interval, particularly between the Kirkwood and Tracey sands and the Buchanan and "Gas" sands.

The section is made up of the following records:

LOGS.

The records of the following wells are in the tables of well data:

List of Wells Affording Data for Cross-Section C-C.

Township.	Section.	Quarter-section.	Well number.
Bridgeport.....	36.....	NE.	7
	31.....	NW.	5
	31.....	NW.	4
Petty.....	30.....	SW.	13
	30.....	SW.	12
	30.....	SE.	18
	30.....	SE.	15
	30.....	SE.	64
	30.....	SE.	63
	30.....	SE.	52
	30.....	SE.	53
	29.....	NW.	30, 31
	29.....	NW.	29
	29.....	NW.	2
	20.....	SE.	3

The remaining detailed logs of the section are presented as follows:

Bport. sec. 36, SE., No. 8.

Operators—Bridgeport Oil Company.
Farm and well—Stoltz, No. 13.
Elevation—523 feet.

Logs—Continued.

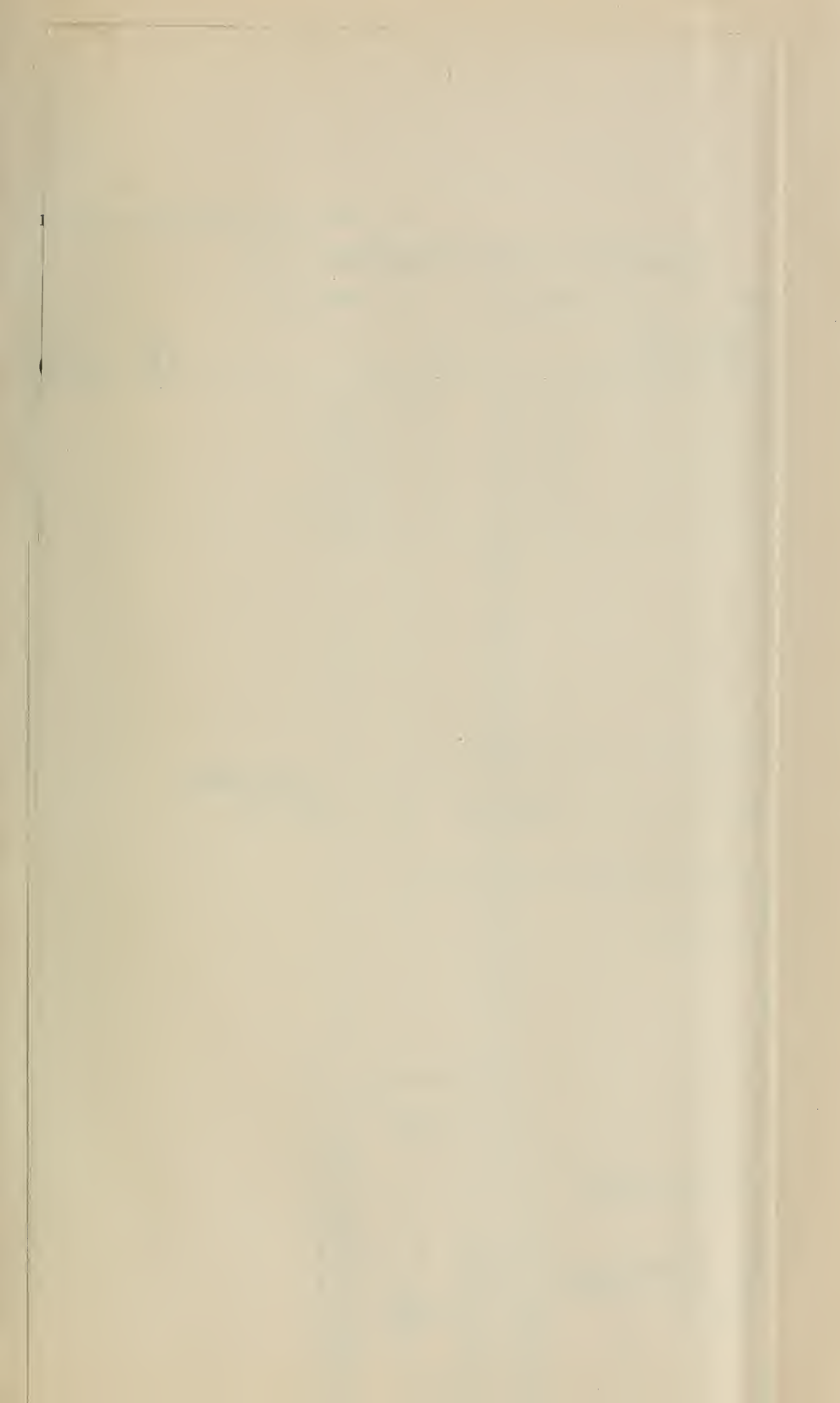
	Thickness Feet	Depth Feet
Slate and shells.....	65	65
Limestone	20	85
Slate	25	110
Limestone	10	120
Sand	15	135
Slate	105	240
Sand (water).....	40	280
Sand	20	300
Slate	40	340
Coal	5	345
Limestone	35	380
Big limestone shell.....	40	420
Red rock.....	8	428
Slate	13	441
Limestone (?) (probably slate and shells).....	139	580
Slate	20	600
Limestone (?) (probably slate and shells).....	170	770
Sand (salt water).....	25	795
Black slate.....	55	850
Sand	40	890
Sand (water).....	45	935
Slate	12	947
Coal	2	949
Slate	10	959
Limestone	5	964
Slate	3	967
Sand	8	975
Slate	45	1,020
Sand	15	1,035
Slate	20	1,055
Limestone	3	1,058
Slate	40	1,098
Limestone	2	1,100
Slate	25	1,125
Limestone	21	1,146
Salt sand.....	99	1,245
Slate	15	1,260
Sand (salt water).....	60	1,320
Slate	27	1,347
Limestone	37	1,370
Slate	20	1,390
Sand	10	1,400
Slate	15	1,415
Limestone	20	1,435
Slate	10	1,445
Sand (water).....	20	1,465
Slate	8	1,473
Limestone	5	1,478
Slate	17	1,495
Limestone	10	1,505
Slate	17	1,522
Red rock.....	13	1,535
Slate	5	1,540
Limestone	35	1,575
Slate	20	1,595
Sand (5 bailers of water per hour).....	10	1,605
Limestone	25	1,630
Slate	43	1,673
Limestone	2	1,675
Slate	4	1,679
Sand (oil, 1,689 feet).....	21	1,700
Sand, broken.....	10	1,710
Slate	5	1,715
Sand, broken.....	12	1,727
Slate	6	1,733
Total depth.....		1,733

Bport. sec. 36, SE., No. 2.

Operators—Snowden Bros.

Farm and well—E. Fyffe, No. 9.

Elevation—506 feet.



Logs—Continued.

	Thickness Feet	Depth Feet
Soil	14	14
Slate	90	104
Limestone shell	10	114
Slate	111	225
Sand (water, 240 to 300 feet)	85	310
Slate	55	365
Sand	40	405
Slate	10	415
Limestone, hard	12	427
Red slate	10	437
Sand, white, hard	15	452
Limestone, white, hard	7	459
Slate, dark, soft	192	651
Sand, white, hard	11	662
Slate	176	838
Limestone, white, hard	2	840
Slate	18	858
Limestone	7	865
Slate	25	890
Sand (water, 905 feet)	50	940
Slate	185	1,125
Sand (water, 1,160 feet)	135	1,260
Slate	25	1,285
Sand (water, 1,325 feet)	40	1,325
Slate	65	1,390
Sand (water, 1,435 feet)	60	1,450
Limestone	10	1,460
Slate, dark	43	1,503
Red rock, cave	7	1,510
Slate, dark, soft	5	1,515
Slate, dark, hard	17	1,532
Sand, white, hard	7	1,539
Slate, white, soft	15	1,554
Shale	19	1,573
Sand (water, 1,539½ feet)	16	1,589
Limestone	20	1,609
Slate, black	20	1,629
Slate, white	9	1,638
Red slate	2	1,640
Shell, hard	2	1,642
Sand, white (oil, 1,651 feet)	57	1,699
Slate, dark	18½	1,717½
Total depth		1,717½
Initial production, 150 bbls.		

Bport. sec. 31, NW., No. 14.

Operators—Central Refining Company.
Farm and well—Perry King, No. 5.
Elevation—487 feet.

	Thickness Feet	Depth Feet
Clay	70	70
Limestone	6	76
Slate	20	96
Limestone	14	110
Slate	35	145
Limestone	5	150
Sand	80	230
Limestone	30	260
Sand	45	305
Slate	10	315
Sand	10	325
Red rock	6	331
Limestone	20	351
Slate	174	525
Sand	12	537
Slate	158	695
Sand	30	725
Slate	55	780
Limestone	5	785
Sand	80	865
Slate and shells	115	980
Sand (show of oil, 995 feet)	60	1,040

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	12	1,052
Sand	83	1,135
Slate	10	1,145
Sand	145	1,290
Slate	15	1,305
Sand	35	1,340
Slate	10	1,350
Red rock	12	1,362
Limestone	53	1,415
Red rock	6	1,421
Sand	15	1,436
Limestone	29	1,465
Slate	14	1,479
Red rock	15	1,494
Sand (oil)	30	1,524
Total depth		1,524

Pet. sec. 30, SE., No. 26.

Operators—Bridgeport Oil Company.

Farm and well—Willey, No. 11.

Elevation—507 feet.

	Thickness Feet	Depth Feet
Soil	6	6
Quicksand	9	15
Slate	85	100
Sand	25	125
Limestone, hard	7	132
Sand	18	150
Slate and limestone	85	235
Sand	5	240
Coal	3	243
Slate and limestone	12	255
Red rock	20	275
Limestone and slate	85	360
Sand	30	390
Slate and limestone	84	474
Coal	2	476
Slate and limestone	134	610
Sand	28	638
Slate and limestone	67	705
Salt sand	45	750
Slate and limestone	45	795
Sand (oil, 820 feet)	35	830
Limestone	10	840
Slate	15	855
Limestone	103	958
Slate	5	963
Sand, broken	26	989
Sand (show of oil, 1,000 feet)	16	1,005
Slate	10	1,015
Sand	25	1,040
Slate	10	1,050
Limestone	15	1,065
Sand	40	1,105
Limestone	10	1,115
Salt sand	57	1,172
Limestone	6	1,178
Slate	21	1,199
Sand	9	1,208
Slate	7	1,215
Red rock	10	1,225
Limestone	5	1,230
Slate	20	1,250
Limestone	15	1,265
Slate	2	1,267
Limestone	8	1,275
Slate	15	1,290
Sand (gas)	10	1,300
Limestone	18	1,318
Slate	36	1,354
Sand (oil, 1,358 feet)	8	1,362
Slate		1,362
Total depth		1,362

*Logs—Continued.**Pet. sec. 29, NW., No. 39.*

Operators—Silurian Oil Company.
 Farm and well—J. D. Bowers, No. 7.
 Elevation—443 feet.

	Thickness Feet	Depth Feet
Sand (oil, 920 feet).....	75	910 to 985
Sand (salt water).....	40	1,060 to 1,100
Slate	38	1,138
Red rock.....	4	1,142
Slate	32	1,174
Limestone	12	1,186
Slate	39	1,225
Limestone	15	1,240
Slate	25	1,265
Red rock.....	5	1,275 to 1,280
Slate	8	1,288
Sand	32	1,320
Slate	35	1,355
Limestone	15	1,370
Slate	50	1,420
Sand (gas, 1,427 feet).....	15	1,425 to 1,440
Total depth.....		1,440
Gas well, 520 pounds rock pressure.		

Pet. sec. 29, NW., No. 8.

Operators—Bridgeport Oil Company.
 Farm and well—Eshelman, No. 16.
 Elevation—438 feet.

	Thickness Feet	Depth Feet
Soil	25	25
Sand	47	72
Slate	53	125
Sand	20	145
Slate	10	155
Sand	10	165
Slate	5	170
Limestone	5	175
Slate	60	235
Limestone	10	245
Slate	15	260
Sand	40	300
Limestone	5	305
Slate	45	350
Sand	15	365
Slate	42	407
Coal	3	410
Slate	90	500
Sand	20	520
Slate	55	575
Limestone, hard.....	5	580
Slate	5	585
Sand, broken.....	81	666
Slate, soft.....	24	690
Limestone	10	700
Slate	60	760
Limestone	15	775
Sandy limestone.....	27	802
Slate, black.....	58	860
Sand (oil).....	10	870
Broken sand.....	52	922
Sand (some oil, 925 feet), white.....	58	980
Slate	7	987
Limestone	11	998
Slate	7	1,005
Limestone, hard.....	10	1,015
Slate	10	1,025
Limestone	10	1,035

Logs—Concluded.

	Thickness Feet	Depth Feet
Slate	15	1,050
Sand (salt water).....	55	1,105
Limestone	5	1,110
Slate	6	1,116
Sandy limestone.....	13	1,129
Limestone	15	1,144
Red rock.....	2	1,146
Slate	34	1,180
Limestone	18	1,198
Slate	12	1,210
Red rock.....	13	1,223
Slate	4	1,227
Sand (gas).....	13	1,240
Limestone, hard.....	10	1,250
Slate	23	1,273
Red rock.....	12	1,285
Sand (oil pay, 1,298 to 1,330 feet).....	63	1,348
Slate	25	1,373
Limestone	14	1,387
Slate	33	1,420
Limestone	6	1,426
Total depth.....		1,426

Pet. sec. 20, SE., No. 7.

Operators—E. N. Gillespie.

Farm and well—Smith, No. 24.

Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand (salt water).....	25	725
Slate and shells.....	251	976
Sand	5	981
Sand (water).....	94	1,075
Slate	95	1,170
Sand, salt.....	86	1,256
Slate and shells.....	41	1,297
Red rock.....	13	1,310
Slate	10	1,320
Limestone	30	1,350
Slate	35	1,385
Shells and slate.....	52	1,437
Sand, broken.....	27	1,465
Sand (oil).....	10	1,475
Slate	8	1,483
Sand	56	1,539
Limestone	5	1,544
Slate	17	1,561
Total depth.....		1,561
Initial production, 80 bbls.		

CROSS-SECTION D-D.

The D-D cross-section, Pl. XV, is drawn across the southern end of the field. It shows the flattened nature of the LaSalle anticline in this region and the small terrace on the western limb of the fold. The "Gas" sand is not noted in this portion of the field. The remaining producing sands are essentially flat but locally irregular. The section is made up of the following records:

LOGS.

The records of the following wells are in the tables of well data:

*Logs—Continued.**List of Wells Affording Data for Cross-Section D-D.*

Township.	Section.	Quarter-section.	Well number.
Bridgeport.....	29.....	NE.	2
Dennison.....	21.....	SW.	2
	21.....	SW.	3
	21.....	NW.	6
	21.....	NE.	9
	21.....	NE.	10
	22.....	NW.	12, 13
Lawrence.....	15.....	SW.	17
	15.....	SE.	1
	15.....	SE.	9
	15.....	SE.	12
	14.....	NW.	7
	14.....	NW.	3
	14.....	NE.	17
	14.....	NE.	1
	12.....	SW.	8

The remaining detailed logs of the section are presented below and elsewhere in this report:

Bport. sec. 30, NE., No. 2.

Operators—Snowden Bros.

Farm and well—McOrr, No. 1.

Elevation—503 feet.

	Thickness Feet	Depth Feet
Soil and slate.....	80	80
Sand, white (water, 80 feet).....	35	125
Slate, white, soft.....	105	230
Sand.....	30	260
Slate.....	10	270
Limestone.....	4	274
Slate.....	156	430
Limestone.....	8	438
Slate, red, soft.....	7	445
Slate, white, soft.....	15	460
Sand.....	15	475
Slate.....	125	600
Coal.....	4	604
Slate.....	71	675
Sand, white, hard.....	5	680
Slate.....	90	770
Limestone.....	15	785
Slate, white, soft.....	83	868
Sand, white, soft (hole full of water, 916 feet).....	48	916
Slate, dark, soft.....	25	941
Limestone, white, hard.....	9	950
Slate.....	20	970
Limestone.....	8	978
Slate.....	19	997
Sand.....	3	1,000
Slate.....	40	1,040
Sand, white, soft (water, 1,045 feet).....	15	1,055
Slate.....	20	1,075
Limestone, white, very hard.....	3	1,078
Slate, dark, soft.....	42	1,120
Sand, white, soft (hole full of water, 1,170 feet).....	210	1,330
Slate, dark.....	53	1,383
Sand, light, hard.....	9	1,392
Slate, dark, soft.....	23	1,415
Sand, white (water, 1,420 feet).....	35	1,450
Slate, dark, soft.....	70	1,520
Sand (hole full of water, 1,522 feet).....	25	1,545
Slate.....	49	1,594
Sand.....	59	1,653
Limestone, white, hard.....	15	1,668

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark, loose.....	19	1,687
Sand, dark, soft (8 bailers of water, 1,708 feet).....	21	1,708
Slate.....	5	1,713
Limestone, white, hard.....	2	1,715
Red rock.....	10	1,725
Slate, light.....	13	1,738
Limestone.....	2	1,740
Slate, dark, very soft.....	14	1,754
Limestone.....	10	1,764
Slate, dark, very soft.....	26	1,790
Sand, light, hard.....	10	1,800
Slate.....	8	1,808
Limestone.....	20	1,828
Slate.....	37	1,865
Sand (4 bailers of water, 1,880 feet).....	71	1,936
Slate.....	22	1,958
Sand (pay, 1,962 to 1,972 feet).....	14	1,972
Total depth.....		1,972

Bport. sec. 29, NW., No. 2.

Operators—Snowden Bros.

Farm and well—H. K. Seed, No. 2.

Elevation—490 feet.

	Thickness Feet	Depth Feet
Soil.....	18	18
Sand, slate and shells.....	332	350
Sand, white, soft.....	50	400
Slate and shells.....	300	700
Slate, white.....	50	750
Slate, dark.....	81	831
Sand, white (salt water, 851 feet).....	129	960
Slate, sand, and shells (salt water, 1,165 feet).....	205	1,165
Sand, white.....	105	1,270
Slate, dark.....	25	1,295
Sand.....	25	1,320
Limestone, white.....	25	1,345
Slate, dark.....	80	1,425
Sand, white.....	187	1,612
Slate.....	8	1,620
Sand, white (salt water, 1,650 feet).....	30	1,650
Red slate.....	25	1,675
Limestone shells.....	55	1,730
Sand.....	20	1,750
Slate and shells.....	35	1,785
Red rock.....	6	1,791
Slate.....	11	1,802
Sand, white.....	26	1,828
Slate.....	17	1,845
Sand, white (salt water, 1,860 feet).....	20	1,865
Slate.....	14	1,879
Shells, hard.....	2	1,881
Sand, brown.....	17	1,898
Total depth.....		1,900
Initial production, 125 bbls.		

Bport. sec. 29, NW., No. 1.

Operators—Snowden Bros.

Farm and well—H. K. Seed, No. 1.

Elevation—476 feet.

	Thickness Feet	Depth Feet
Red rock.....	5	415
Sand, dry.....	14	610
Slate.....	150	760
Sand.....	15	775

830
 870
 880
 920
 930
 950
 045
 275
 300
 450
 490
 510
 530
 537
 700
 705
 800
 815
 830
 858
 860
 862
 874
 885

 885

oth
 et
 90
 .07
 .45
 .55
 .65
 .65
 .78
 .50
 .20
 .10
 00
 05
 20
 80
 65
 80
 90
 00
 16
 22
 30
 85
 29
 59
 90
 00
 05
 21
 44

Slate, dar
 Sand, dar
 Slate
 Limestone
 Red rock.
 Slate, ligl
 Limestone
 Slate, dar
 Limestone
 Slate, dar
 Sand, ligh
 Slate
 Limestone
 Slate
 Sand (4 b
 Slate
 Sand (pay

Total

Operato
 Farm a
 Elevatio

Soil
 Sand, slate
 Sand, whit
 Slate and s
 Slate, whit
 Slate, darl
 Sand, whit
 Slate, sand
 Sand, whit
 Slate, dark
 Sand
 Limestone,
 Slate, dark
 Sand, whit
 Slate
 Sand, white
 Red slate.
 Limestone
 Sand
 Slate and
 Red rock..
 Slate
 Sand, white
 Slate
 Sand, white
 Slate
 Shells, har
 Sand, brow

Total c
 Initial pr

Operator
 Farm an
 Elevatio

Red rock...
 Sand, dry..
 Slate
 Sand

Logs—Continued.

	Thickness Feet	Depth Feet
Slate	55	830
Sand (salt water, 840 and 880 feet)	40	870
Slate	5	875 to 880
Sand (water)	40	920
Slate	10	930
Sand (water)	20	950
Slate	95	1,045
Sand (water)	230	1,275
Limestone	25	1,300
Slate	150	1,450
Sand (water, 1,460 feet)	40	1,490
Slate	20	1,510
Limestone	20	1,530
Sand	5	1,532 to 1,537
Slate	163	1,700
Red rock	5	1,705
Slate	95	1,800
Red rock	15	1,815
Sand (water, 1,830 feet)	15	1,830
Slate	28	1,858
Limestone	2	1,860
Slate	2	1,862
Oil sand	12	1,874
Slate	11	1,885
Total depth		1,885
Initial production, 40 bbls.		

Law sec. 11, SE., No. 6.

Presented in the stratigraphic discussion, page 67.

Law sec. 12, SW., No. 7.

Presented in the stratigraphic discussion, page 68.

Law sec. 12, SW., No. 4.

Operators—Bridgeport Oil Company.

Farm and well—Henry, No. 1.

Elevation—440 feet.

	Thickness Feet	Depth Feet
Soil, etc. ....	.....	90
Sand (fresh water)	17	107
Slate	38	145
Limestone	10	155
Slate	10	165
Limestone shells	100	265
Red rock	13	278
Limestone, slate, and shells	72	350
Slate, pencil cave	70	420
Limestone and slate	190	610
Sand (hole full of salt water, 700 feet)	90	700
Slate and shells	205	905
Sand (salt water, 910 feet)	15	920
Slate	60	980
Sand (salt water, 1,000 and 1,030 feet)	85	1,065
Slate, black	115	1,180
Slate and shells	110	1,290
Limestone	10	1,300
Sand (water, 1,300 feet)	16	1,316
Slate	6	1,322
Sand	8	1,330
Limestone	55	1,385
Slate and shells	44	1,429
Limestone	30	1,459
Slate	31	1,490
Red rock, cave	10	1,500
Slate	5	1,505
Lime	16	1,521
Slate	23	1,544

Logs—Concluded.

	Thickness Feet	Depth Feet
Red rock.....	5	1,549
Sand (oil, 1,556 and 1,568 feet).....	31	1,580
Slate	10	1,590
Sand (show of oil).....	5	1,595
Slate	5	1,600
Sand (oil pay).....	10	1,610
Limestone shell.....	90	1,700
Red rock, cave.....	10	1,710
Limestone.....	77	1,787
Sand	4	1,791
Limestone	91	1,882
McClosky sand.....	6	1,888
Total depth.....		1,889

Law. sec. 12, SE., No. 2.

Operators—Bridgeport Oil Company.

Farm and well—Tracey Heirs, No. 1.

Elevation—455 feet.

	Thickness Feet	Depth Feet
Sand (water at 12 feet.)		
Sand and gravel.....	85	85
Slate	15	100
Sand	10	110
Limestone	10	120
Sand	30	150
Limestone	5	155
Slate	85	230
Limestone	12	242
Slate	48	290
Limestone	10	300
Slate	15	315
Sand	25	340
Limestone	12	352
Slate	48	400
Limestone	10	410
Slate	50	460
Limestone	15	475
Slate	103	578
Limestone	5	583
Slate	17	600
Sand (water).....	30	630
Slate	50	680
Limestone	30	710
Slate	13	723
Sand	12	735
Slate	80	915
Limestone	5	920
Slate	27	947
Sand	63	1,010
Slate	31	1,041
Sand (water).....	29	1,070
Slate	15	1,085
Sand	40	1,125
Slate	68	1,193
Limestone	15	1,208
Slate	57	1,265
Sand (show of oil, 1,285 feet).....	47	1,312
Slate	48	1,360
Sand	45	1,405
Slate	20	1,425
Limestone	25	1,450
Slate	30	1,480
Red rock.....	10	1,490
Limestone	10	1,500
Sand	10	1,510
Slate	55	1,565
Sand (water, 1,570 feet).....	20	1,585
Slate	5	1,590
Sand (show of oil, 1,595 feet. Water, 1,600 feet).....	25	1,615
Slate	112	1,727
Limestone	45	1,772
Sand	14	1,786
Limestone	297	2,083
Well plugged and abandoned.		

RELATIONS OF STRUCTURE TO OIL AND GAS.

OIL.

The oil sands of Lawrence county have proven the richest in Illinois. They show remarkable stability in their yield and have promise of long life. The shallower sands have declined rapidly, but the Kirkwood, Tracey and McClosky sands are still prolific. Of the 2,810 wells mapped in this county, but 156, or 5½ per cent were dry. There are 890 wells mapped in Petty township, 860 in Bridgeport, 349 in Lawrence, and 711 in Dennison. The range of initial production is between one and 2,400 barrels per day. The Kirkwood sand has shown the best general production while the McClosky sand yielded the greatest number of gushers. The Bridgeport sand is the second best general producing sand. It has declined rapidly, however, and is giving way to the development of steadier sands beneath. There are 1,835 of the 2,654 producing wells, or about 70 per cent, that furnish information of the initial yield. This is sufficient to indicate the nature of distribution of oil in this field with respect to structural conditions. The following table shows the number of wells that furnished data of initial productions for each sand. They are listed by townships, sands, and extent of yield. The gas and dry wells are also given:

Table Showing Initial Productions of Various Sands in the Lawrence County Field.

Lawrence county.		Number of wells classified according to their initial production.							
Township.	Producing sand.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Petty.....	Bridgeport.....	4	27	19	21	15	1	44
	Buchanan.....	.....	13	6	3	.....	.....	3
	"Gas".....	.....	71	87	63	10	4	8
	Kirkwood.....	2	20	15	7	1	.....	22
	Tracey.....	8	52	35	23	4	6	5	
	McClosky.....	.....	.....	.....	.....	.....	.....	.....
Bridgeport...	Bridgeport.....	6	48	100	47	3	3	22
	Buchanan.....	.....	4	8	30	38	8	.....
	"Gas".....	.....	7	2	3	1	.....	3
	Kirkwood.....	4	60	74	47	19	4	.....
	Tracey.....	.....	1	1	1	.....	.....	1
	McClosky.....	.....	5	13	3	6	4	8
Lawrence....	Bridgeport.....	1	1	4	25
	Buchanan.....	.....	7	11	51	22	1	.....
	"Gas".....	.....	.....	.....	.....	.....	.....	.....
	Kirkwood.....	3	44	27	21	6	.....	.....
	Tracey.....	.....	8	1	.....	.....	.....	.....
	McClosky.....	1	2	4	4	5	4	.....
Dennison....	Shallow.....	4	65
	Bridgeport.....	5	50	51	54	9	.....	9
	Buchanan.....	1	1	3	22	10	.....	.....
	"Gas".....	.....	.....	.....	.....	.....	.....	.....
	Kirkwood.....	12	65	76	38	11	.....	1
	Tracey.....	3	5	4	2	1	.....	1
Total for field.	McClosky.....	4	5	7	6	16	156
	Shallow.....	.....	4	.....	.....	.....	.....	.....
	Bridgeport.....	15	126	171	126	27	3	10	
	Buchanan.....	1	12	22	103	70	9	.....
	"Gas".....	.....	20	8	6	1	.....	6
	Kirkwood.....	3	240	264	169	46	8	9	
	Tracey.....	5	34	21	10	2	24	
	McClosky.....	9	63	57	37	21	30	13	

PETTY TOWNSHIP.

The oil in sections 25, 26, 35 and 36, at the extreme northern end of the county, comes from the McClosky and Tracey sands. The initial yield per well does not exceed 200 barrels. The oil in both sands is found under a small dome on the top of the fold, which is separated from the elongated dome farther south by a narrow barren depression across the field. The McClosky sand is highly productive along a narrow strip north and south through the center of the field, especially in sections 18 and 30. The largest initial productions of Lawrence county were found in this sand in section 18. The oil is crowded into a small dome, similar in height, extent, and altitude to the arch in the extreme northern end of the field. The same sand is productive at a like altitude on the western flank of the dome-like structure in section 30. The productive strip is very narrow through this section but becomes broader in sections 31 and 6, Bridgeport township.

The Kirkwood sand shows the greatest number of producing wells in the remaining sections of the field, especially along the eastern dip of the anticline in sections 20 and 29. The wells in this region reported excellent initial productions. The Kirkwood sand is also highly productive in section 30, between 30 and 80 feet lower than the crest on the west side of the dome.

The "Gas" sand primarily produces gas but is productive of oil in the following wells:

List of Wells Producing Oil From the 'Gas' Sand; Lawrence County.

Township.	Section.	Quarter-section.	Number of well.	Initial production in bbls.
Petty.....	1.....	NE.	9	20
	7.....	NW.	9	40
	7.....	SW.	1	45
	7.....	SW.	4	35
	7.....	SW.	17	15
	12.....	NE.	2	65
	12.....	SW.	9	75
	12.....	SE.	6	135
	12.....	SE.	7	110
	13.....	SE.	2	75
	17.....	SW.	5	35
	17.....	SW.	6	25
	20.....	NW.	1	25
	24.....	NE.	2	40
	24.....	SE.	7	20
Bridgeport.....	5.....	NW.	9	170
	6.....	NE.	19	70
	6.....	NE.	22	30
	6.....	NE.	23	45
	8.....	NE.	9	60
	8.....	NW.	26	50
	8.....	NW.	27	30
	31.....	NE.	55	100
	31.....	NE.	56	100
	31.....	NE.	59	250
	31.....	SE.	4	50
	32.....	NE.	5	105
	32.....	NE.	18	20
	32.....	SW.	6	25

The Buchanan sand appears unproductive in Petty township. It is not correlated in this region because of possible confusion with the Bridgeport lenses. In fact, it may be possible that some of the lower

productive lenses of the Bridgeport sand are mistaken for the Buchanan.

The Bridgeport sand is especially productive in sections 18, 19, 20, 29 and 30. The initial yields are between 30 and 300 barrels.

BRIDGEPORT TOWNSHIP.

The Bridgeport, Buchanan, and Kirkwood sands are the most productive in Bridgeport township. The Bridgeport and Kirkwood sands have the largest number of average size wells, while the Buchanan sand has the larger number of gushers.

The Bridgeport sand is especially productive in sections 32, 5 and 8, which lie structurally along the southern slope of the double plunging anticline. The average yield in these sections is between 50 and 150 barrels.

The Buchanan sand has its type area in section 17. The wells are very rich in their initial yield, varying between 100 and over 500 barrels. There are a number of gushers recorded from this locality. The oil is crowded into a small dome on the crest of the anticline; the structure is discussed on page 107.

The Kirkwood sand yields the best wells in sections 6, 31 and 32, which lie along the western flank of the arch and the south-western slope of the largest dome.

The McClosky sand is productive in sections 6 and 31. This is an extension of the narrow productive area through Petty township. Several gushers are reported from section 31.

LAWRENCE TOWNSHIP.

The Kirkwood and Buchanan sands are the most productive in Lawrence township. This locality is the type area for the Kirkwood and a portion of the Buchanan sands.

The Buchanan sand is especially productive in sections 15 and 16. The average yield is 100 to 200 barrels. Several large wells are reported from this area. The oil is crowded into a dome similar in height and altitude to the one in section 17, Bridgeport township.

The type locality for the Kirkwood sand lies in sections 13 and 14 and extends southward into Dennison township. The wells are not highly productive. The oil lies in an extensive flat in the sand which spreads southward through the remainder of the field. The McClosky sand shows a number of excellent wells in section 14.

DENNISON TOWNSHIP.

The Bridgeport, Kirkwood and McClosky are the prominent producing sands of Dennison township. The Kirkwood sand, as in Bridgeport and Petty townships, is the most widely productive. The Bridgeport sand closely follows the Kirkwood sand in yield but is spotted in its distribution. The McClosky formation has furnished the best producing wells.

The Bridgeport sand is especially productive in sections 2, 26, 34 and 35. This area lies along the southwestern edge of the field. The wells average 50 to 150 barrels initial yield.

The Buchanan sand is notably productive only in section 21, which is an extension of the small dome lying in sections 15 and 16, Lawrence township. The wells are exceptionally large in their initial yield.

The Kirkwood sand shows many wells in sections 22, 23, 25, 26, 35 and 36. The initial yield averages 100 barrels. The oil lies over a broad flat in the sand that covers most of Dennison township.

The Tracey sand shows a light production in sections 25 and 26.

The McClosky sand has its type area and best production in section 25. There are many gushers from the McClosky sand in this section, the highest reporting 1,860 barrels for the first day. The productive areas of this sand lie at an altitude of about 160 feet above the datum plane.

GAS.

There are about 70 gas wells in Lawrence county. Gas is reported incidentally in over half of the records and is widely distributed in all the sands. The Kirkwood, Tracey and McClosky sands have yielded the most gas, particularly in Petty township where the field is governed by an elongated dome. The following table shows the locations and all available production data of the gas wells in Lawrence county:

Locations of Gas Wells in Lawrence County, and Sources of Gas.

Township.	Section.	Quarter-section.	Well number.	Name of sand.	Yield in cu. ft. per day.	Remarks.
petty.....	1.....	NW.	6	Tracey.....		
	1.....	SW.	3			
	2.....	NE.	2	Kirkwood.....	4,000,000	Second lens.....
	2.....	NE.	4			
	2.....	NE.	6	McClosky.....	2,500,000	
	2.....	NE.	7	Kirkwood.....		
	2.....	NW.	1	do.....		
	2.....	SE.	2	do.....	7,000,000	600 pounds pressure
	2.....	SE.	5	do.....		Second lens.....
	7.....	NW.	10	Tracey.....		
	7.....	SW.	9	do.....		
	12.....	NE.	4	Kirkwood.....		
	12.....	NE.	5	Tracey.....		
	12.....	NW.	1	do.....		
	12.....	NW.	2	do.....		
	12.....	NW.	7	do.....		
	12.....	SE.	1	do.....		
	12.....	SE.	9	do.....		
	13.....	NE.	4	Kirkwood.....		
	19.....	NW.	2	Tracey.....	3,000,000	
	19.....	NW.	6	do.....	7,500,000	650 pounds pressure
	19.....	SE.	6	do.....		400 pounds pressure
	19.....	SE.	29	"Gas".....		
	20.....	SW.	29	Bridgeport.....		
	24.....	NW.	3	Kirkwood.....		Second lens.....
	25.....	NE.	7	Tracey.....		T. 5 N., R. 13 W....
	25.....	SW.	4	do.....		do.....
	25.....	SW.	5	do.....		do.....
	29.....	NW.	39	do.....		520 pounds pressure
	29.....	SE.	1	"Gas".....		
	30.....	NE.	24	McClosky.....		
	30.....	SW.	6	Kirkwood.....		
	30.....	SW.	9	Tracey.....		
	30.....	SW.	13	"Gas".....		
	30.....	SE.	31	do.....		
	30.....	SE.	59	McClosky.....	6,000,000	
	30.....	SE.	69	do.....	2,000,000	
	36.....	NW.	9	do.....		T. 5 N., R. 13 W....
	36.....	NW.	12	Kirkwood.....		do.....

Locations of Gas Wells in Lawrence County—Concluded.

Township.	Section.	Quarter-section.	Well number.	Name of sand.	Yield in cu. ft. per day.	Remarks.
Bridgeport.....	8.....	NW.	29	Buchanan.....	1,000,000	.....
	31.....	NE.	7	McClosky.....	1,000,000	.....
	31.....	NE.	23	do.....	.....	.....
	31.....	NE.	48	do.....	.....	.....
	31.....	NE.	50	do.....	.....	.....
	31.....	SE.	6	"Gas".....	.....	.....
	31.....	SE.	11	McClosky.....	.....	.....
	31.....	SE.	14	"Gas".....	.....	.....
	32.....	SW.	6	do.....	1,000,000	.....
	32.....	SW.	10	McClosky.....	.....	.....
	32.....	SW.	24	Kirkwood.....	.....	.....
	1.....	SW.	2	Tracey.....	4,500,000	.....
	1.....	SW.	6	Kirkwood.....	3,000,000	Second lens.....
	27.....	SE.	3	Bridgeport.....	.....	.....
Dennison.....	27.....	SE.	4	do.....	.....	.....
	34.....	NE.	2	do.....	.....	.....
	34.....	NE.	5	do.....	.....	.....
	34.....	NE.	6	do.....	.....	.....
	35.....	NE.	4	do.....	2,000,000	.....
	35.....	NW.	7	do.....	.....	.....
	35.....	NW.	8	do.....	.....	.....
	35.....	SE.	1	Shallow.....	2,500,000	.....

PETTY TOWNSHIP.

The greatest number of gas wells of the Lawrence county field lie in Petty township. They are scattered along the flanks of the anticline. The "Gas" sand yields gas in small quantities over Petty township and abundantly in section 30. The gas does not occur at the apex of the large dome centering in this section but lies about 60 feet below on its western flank. The Kirkwood sand is especially productive of gas in sections 1 and 2 in the northern end of the field. The gas seems to be arrested along the steep western flank of the anticline. The Tracey sand shows the greatest productions of gas in this township, and, indeed, over the entire area. The best yield is in the northern portion of the township and through the middle of the broad fold. Several wells also yield gas about 120 feet below the apex of the dome in section 30. The McClosky sand shows an excellent yield of gas on the crest of the same dome.

BRIDGEPORT TOWNSHIP.

The "Gas" and McClosky sands yield the best pressures of gas in the northern end of the township. The McClosky sand shows several good wells in section 31, about 70 feet lower than the crest of the dome. The two smaller domes in sections 31 and 32 contain gas. The "Gas" sand yields abundant gas in sections 6 and 31, but it lies between 100 and 140 feet below the crest of the dome. The Buchanan sand usually possesses little or no gas, but it reports it in several wells in sections 7 and 8. The type locality of this sand, section 17, does not report any gas. The Kirkwood sand shows a scattered record of gas in its many wells, but particularly in section 17.

LAWRENCE TOWNSHIP.

The Kirkwood sand shows gas in most of the wells in Lawrence township. The Bridgeport and Buchanan sands show no gas while the McClosky gives data from about six wells. There are no commercial gas wells in the township.

DENNISON TOWNSHIP.

The Bridgeport sand shows a number of gas wells in sections 1, 2, 34 and 35. Most all the wells penetrating the Bridgeport lenses record gas in them. The Kirkwood sand gives numerous records of gas over the township but particularly in sections 22, 23 and 36. The McClosky sand shows abundant gas in sections 25 and 36. The gas would be marketable from this sand but for the enormous yield of oil.

RELATIONS OF STRUCTURE TO SALT WATER.

The sands of Lawrence county show abundant water along the flanks of the anticline and but little through the center of the field except in the lower Bridgeport and Buchanan sands. The Pottsville rocks appear well saturated with water over the entire field and into the limbs of the LaSalle fold. The Chester sands are not uniformly saturated with water but seem to have limit lines of saturation along the limbs of the fold, more particularly along the western side. The McClosky sand similarly shows abundant water on the western slope of the fold and in parts of Petty township.

PETTY TOWNSHIP.

There is but little water shown in the record of wells in the producing sands of Petty township. The Bridgeport and Buchanan sands are closely associated and show abundant water in sections 1, 2, 19, 20, 29, 30 and 36. The Kirkwood sand shows some saturation beneath the oil in sections 12 and 36. The McClosky sand shows some water content in sections 12, 13, 15, 24 and 25.

BRIDGEPORT TOWNSHIP.

All the sands in sections 1, 18 and 36, Bridgeport township dip low on the western limb of the anticline and show much water. The upper Bridgeport lenses, like those of the Robinson sand of Crawford county, are generally barren of water within the oil pool in this region. The lower lenses are widely saturated in sections 6, 7, 8, 31 and 32. The Buchanan sand is completely saturated with water in sections 6 and 31, but water underlies the oil zone in its type locality, section 17. The Kirkwood and McClosky sands are usually free from water in this region, except along their outer edges.

LAWRENCE TOWNSHIP.

The Bridgeport sands contain abundant water in Lawrence township. The Buchanan sand is water-bearing in sections 2, 11, 12 and 14, but

contains less water and is oil-bearing in section 16. No water is reported for this sand in section 15. The bottom of the Kirkwood sand contains water in sections 1 and 13. The Tracey sand, in several cases, shows abundant water in section 10. The McClosky sand is reported water-bearing only in section 1.

DENNISON TOWNSHIP.

The lower Bridgeport lenses and Buchanan sand contain water over most of Dennison township. The upper lenses are productive at the southern end of the field and show some water beneath the oil in section 2. The Kirkwood sand shows water beneath the oil in sections 1, 5, 6, 7, 24 and 30. The McClosky sand is wet in sections 19, 24, and in the northern part of 25.

CHAPTER V.

General Summary of Geological Conditions in Crawford and Lawrence Counties.

GENERAL STATEMENT.

The features of the structure maps of the different sands, and their individual oil, gas, and salt water relations just described, are sufficiently similar to permit general conclusions as to the accumulation of oil and gas in Crawford and Lawrence counties. These conclusions add to the general fund of evidence confirming the accumulation of oil and gas in folded rocks.

GENERAL STRUCTURE OF REGION OF THE LA SALLE ANTICLINE.

The greater portion of Illinois lies within the Eastern Interior Coal Basin, which is, broadly speaking, an extensive spoon-shaped basin, with its long axis extending along a line through Cerro Gordo, Lovington and Olney and with its deepest part in Wayne, Hamilton and Edwards counties. The east side of the basin rises into a strong longitudinal fold known as the LaSalle anticline, which extends from the vicinity east of LaSalle in a southeastern direction to Sadorous in Champaign county. From thence it passes near Tuscola and enters the oil territory of Clark county near Westfield. It continues in a direct line through the oil fields in Clark, Crawford and Lawrence counties until the vicinity of St. Francisville in the latter county is reached. The identity of the fold is lost beyond Lawrence county but it is thought to cross the Wabash into Indiana and possibly merges into the eastern flank of the Illinois basin. The writer has compiled several structure sections¹ which illustrate these facts.

The formations ascend from the axis of the basin into the Crawford and Lawrence county oil fields at the rate of about 50 feet per mile. The ascent becomes more rapid in Lawrence county because of the presence here of the very sharp apex of the anticlinal dome.

The sands of the Illinois basin have been thoroughly tested immediately west of the oil fields and found full of salt water. The lower

¹ Ill. State Geol. Survey, Bull. No. 16, 1910, pls. 7 and 11.

flanks of the fold are known to yield abundant salt water in all the sands which are productive in the main fields. The conditions for the accumulation of oil and gas in the fields are ideal because of the presence of the following governing factors:

1. There is an extensive anticline with a marked basin on at least one side.

2. The depressions on both sides of the fold, showing abundant water, comprise extensive "feeding areas" for the arch.

3. The sands are commonly porous and hence form suitable reservoirs for the storage of oil.

4. There are abundant shales and limestones overlying the sandstones which originally furnished the oil and now probably serve as impervious covers to the reservoirs.

5. The sands in both limbs of the anticline are abundantly saturated with salt water which is probably instrumental in holding the oil and gas captive in its present position. This consideration is highly important because of the relations of water and oil and the resultant concentration of oil in folded structure.

6. The portion of the arch containing oil is six to seven miles in its extreme breadth and one or two miles wide in the narrowest places. The large amplitude and breadth of the arch offered an enormous reservoir capacity.

DETAILED FEATURES OF THE FIELDS.

The detailed discussion of the structure in the Crawford and Lawrence county field proves conclusively the presence of a major fold governing the accumulation of oil and gas in this region. The crest of the fold, however, is shown to be very irregular. It is interrupted by numerous minor domes and transverse depressions, which perhaps have been instrumental in segregating the pools. The succession of irregularities culminates in a very extensive uplift of the axis of the anticline north of Bridgeport, Lawrence county, which has the appearance of an elongated dome. Other portions of the anticline show a flattened crest or minor domes.

With one exception the best collection of oil was found over the extensive flat areas along the crest of the parent fold. The large dome in the Lawrence county field shows an exceptional accumulation of oil around its flanks but not at the crest. The domes over the entire area investigated are logical gas reservoirs. The gas, however, does not lay at the apexes of the domes but a short distance below. The best gas and oil wells on the dome in Petty township, Lawrence county, are from 50 to 100 feet lower than the apex. The smaller domes in Lawrence county show good accumulations of oil.

The uppermost part of the flanks of the major fold contain abundant oil. The oil decreases in quantity toward the outer boundaries of the field. The western limit is abrupt and the wells along this boundary produce abundant water. Enough data are at hand to conclude that this is a line of water saturation and that above this line and over the fold most of the sands are wholly oil-bearing. The Pottsville rocks are exceptional in that they contain water in the lower portions and in

some cases are wholly saturated over the fold. These rocks are widely distributed over Illinois and are conspicuous for their yield of salt water. The sands lower than the Pottsville and the upper Bridgeport and Robinson lenses do not show much saturation over the crest of the anticline. There are one or two spots in the field that show isolated patches of water-bearing sand, particularly in the Kirkwood and McClosky sands.

Some of the non-producing wells in the producing areas owe their condition to impervious sands or thinning out of producing sands. Lack of porosity will perhaps explain the position of dry wells often occurring at or near the very minor domes or small pits that occasionally exist along the crest of the fold.

PROSPECTIVE POOLS.

It is probable that the high spots along the crest of the major fold, especially the one in section 30, Petty township, Lawrence county, represents cross folding or buckling. This condition would suggest that the territory east of the fold would be similarly affected, particularly in the lower producing formations. New pools are then possible to the east of the fold in positions and directions perpendicular to the trend of the field and parallel to the raised portions of the anticline. The presence of oil in Honey Creek and Montgomery townships of Crawford county seem to bear out this relation. The chief raised portions of the fold occur in section 1, the northwest corner of section 18, and section 30 of Petty township; sections 10 and 14, Lawrence township and sections 23, 26 and 35 Dennison township, all of Lawrence county.

The western side of the Crawford and Lawrence county oil fields, with one exception, is sharply defined and is bounded by a line of water saturation. In addition to this, the dip of the strata into the Illinois basin is so pronounced that the only possibility for new pools lies along unknown terraces, similar to the one occurring in section 29,* Bridgeport township.

The extension of the south end of the field is problematical and almost impossible to forecast with the present development, owing to the lack of data and the uncertain character of the anticline. It is also likely that the gap between the Lawrence and Crawford county fields will remain barren as it seems to represent a large transverse basin on the fold.

Possibilities for the production of oil in sands in Crawford county, corresponding to the deep producing formations of Lawrence county, are slight because of the established fact that these formations gradually pinch out to the north of Lawrence county.

CHAPTER VI.

Economic Features of the Illinois Fields.

INTRODUCTION.

The discovery of profitable quantities of oil in Clark county in 1904 and 1905 led to a remarkably rapid development of the oil fields in the State. The development is all the more surprising when it is noted that in the short period of six years a production of such proportions reached its zenith. Other great fields of America required as high as 30 years to attain such a position. Besides, the Illinois production comes from the smallest areal extent of oil producing territory of the first seven ranking states:

Rank.	State.	Square miles of petroleum lands.
1	California	850
2	Oklahoma	400
3	Illinois	250
4	West Virginia	570
5	Ohio	650
6	Texas	400
7	Pennsylvania	2,000

Illinois gained ninth place for production and value of oil in 1906 and third place for both in 1907. Since 1907 the State has held third place for production and second for value and has been exceeded only by California and Oklahoma. Up to January 1, 1912, about 19,982 wells had been drilled for oil and gas in the State, of which 15.7 per cent were barren. The remaining 84.3 per cent have produced since 1905 about 157,905,084 barrels of oil, valued at about \$101,666,473. The extent of the fields, the grade of the oil, and the efficiency of production, place them among the greatest of the world from an economic point of view.

The successful growth of the Illinois fields may be attributed particularly to the quiet efficiency of experienced and capable oil men. The Appalachian fields supplied the greatest influx of operators, and these, through many years of training, determined the trend of development. They soon established the limits of the field and thus prevented useless explorations.

After oil has been found in commercial quantities in the shallow Casey pool, the operators began to drill in all directions. They were, however, soon limited east and west of Casey by boundaries which were defined by barren wells that either failed to show oil or yielded large quantities of salt water. This caused a shifting of the development inward and along a north and south direction. The discovery of oil in deeper sands in Crawford county led to the same tactics of development, and eventually the long narrow strip of oil country in Clark county approached the broader pool of Crawford county. Similarly, the movement continued from the deeper productive fields of Lawrence county.

The Illinois fields are somewhat different from others because of local conditions and the necessity of properly and economically caring for enormous quantities of oil. The business is divided into many branches, each of which, from the first step of leasing to that of an established production, requires careful and systematic attention. The Ohio Oil Company (Standard) controls most of the production and under its management, there have sprung up various departments necessary to cope with the rapidly increasing yield of oil. This has been done remarkably well and as has been truthfully said, "there never has been an oil field so well taken care of in so short a time as that of Illinois."

The following general discussion of the several phases of the oil business is made with a view of enlightening those readers who are not familiar with the business. It is not intended to be an authoritative explanation of the methods used in developing an oil field or of the details of drilling a well.

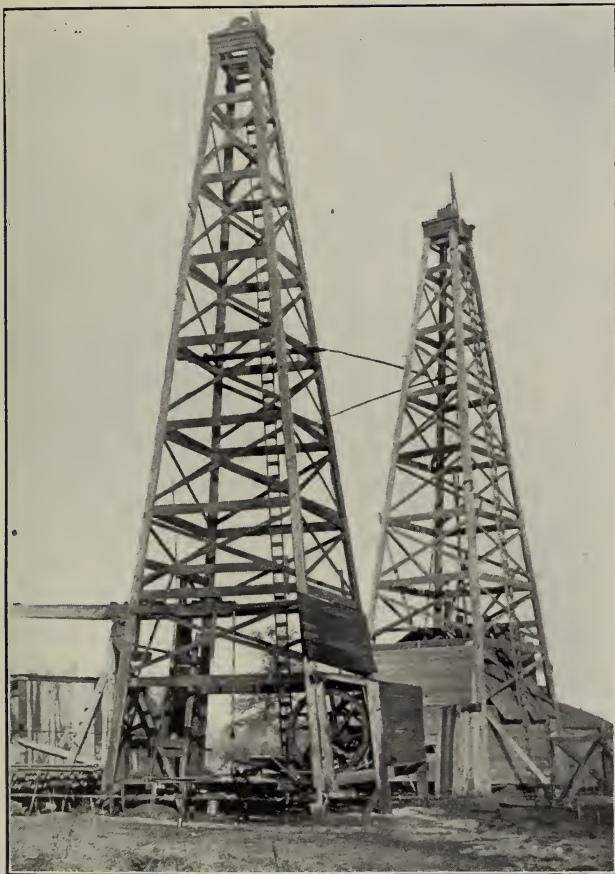
DEVELOPMENT OF OIL PROPERTIES.

FORENOTE.

The first step necessary to the development of any oil field is a business-like lease of the land, conveying distinct rights to both the landowner and the lessee. The successive steps of choosing well sites, drilling, shooting wells, and equipping oil properties involve activities separate from each other, yet so connected that each is a necessary part of the whole. In fact, the largest oil companies in Illinois have separate branches for leasing, drilling, buying, pipe-line discharging, telegraphing, and engineering.

The first step of the oil operator after learning of an "oil strike," is to lease as near as possible to the producing wells. If he has sufficient knowledge of the geological structure of the area, he follows the trend of the anticline or terrace, as the case may be. If he feels that his properties are within the limits of possible producing territory, he makes his locations and starts his drilling.

It is regrettable that many inexperienced operators are attracted by the rush to newly proven areas and by lack of knowledge of both the nature of the business and underground conditions, are led to failure. It is often the case that such novices open up a field. Any observer of the oil business will soon note, however, that the larger companies and operators do but little "wildcatting," preferring to profit by the ex-



The standard derrick.

perience of the novice. It is true also, that field limits of many proven areas are established only by these indiscriminate test holes.

LEASING.

In contrast with the oil territories of the mountainous Appalachian regions and of the far west, Illinois is a drift-covered plain. All of it is either in cultivation or devoted to pasture. The land divisions are simple and uniform and are based on the civil township of thirty-six sections. Each section usually is sub-divided into tracts of the multiple of twenty acres. The leasing of properties then starts upon a simple basis.

There are no set rules concerning leasing as this is necessarily dependent upon local conditions. The oil men deal entirely with individual land-owners, and leases are private bargains. While some of the territory is developed by land-owners, it is more often leased to operators for a period of five years, with option of further lease as production continues. If adjoining property is untested at the time of leasing, the farmer usually receives a royalty of from one-eighth to one-sixth of the future production, with the further stipulation that drilling is to begin within six months to two years, or that a stated rental per acre will be paid until the first well is drilled. If, on the other hand, the desired property lies near producing territory, the land assumes added value and a bonus is demanded in addition to the royalty and the reservation of the fee. The closer the farm is to good oil properties, the higher the bonus becomes; it averages from \$10.00 to \$40.00 per acre, but sometimes reaches \$200.00 or more per acre.

The land-owner retains all surface rights of the land, except on the portion necessarily used by the operator for his equipment, including a full quota of wells, power house, boiler house, tankage, waste pit, and pull rods. Upon an 80-acre tract not more than six acres are necessary for this. A large portion of the land in the oil district is not considered especially valuable from an agricultural point of view and consequently but little restriction is placed upon the operations.

In certain portions of the field, industrious farmers till their ground and at the same time derive a good income from oil. If a large storage of oil is contemplated it is customary to buy the land outright for a so-called tank-farm.

Stipulations are usually made regarding the use of gas by the land-owner and of payment by the lessor for active gas wells. This generally averages from \$100.00 to \$200.00 per well per year. There are but few large gas wells in the Illinois fields and the income is insignificant as compared with that derived from the vast production of oil.

The lessee further agrees not to drill wells closer than 200 feet to any dwelling or barn, except in the case of town lots. (See Pl. XXIII, B.) This may be made optional with the land-owner and merely serves as a protection to his perishable property.

It is also agreed that the lessee shall be responsible for all damages caused to growing crops, provided there is enough in amount to warrant complaint. Oftentimes when a well is shot and a good flow is secured, the wind will spray the oil over a considerable area of growing grain

and will thus render it unfit for use. Again careless driving over cultivated ground will destroy a portion of the crop and so warrant complaint. All pipe lines are buried below plow depth.

After production is established, the lease becomes the most valuable part of the oil property. It is often sold, the price depending mainly on the number of producing wells and their average daily yield. A transfer of lease often takes place even though no wells have been drilled on the tract. The price of this is dependent upon the distance from proven property. In fact, lease speculation has become a very lucrative business, particularly in newly opened areas. The speculator watches the prospecting and upon the first news of the oil strike, rushes to the locality and leases what he can without a great amount of expense. The demand for land "close up" to the active wells soon outstrips the supply and the unfortunate operator who is late or who really wishes to drill, is forced to pay the speculator's price. A good example of this type of traffic was shown in the recent Carlyle, Illinois excitement.

The following form of lease is in common use in Illinois:



The steel derrick.

Oil and Gas Lease—Concluded.

such well, as aforesaid, shall be and operate as a full liquidation of all rental under this provision during the remainder of the term of this lease. Any payments falling due may be made direct to lessor.....or deposited to.....credit in

Second party agrees to bury all pipe lines below plowing depth when requested by first par.....

Second party agrees to pay all damages to crops caused by his operations on this land.

IT IS AGREED, That the second party is to have the privilege of using sufficient water, oil or gas from the premises to operate same (except water from wells, ponds or cisterns without consent of first part.....) and at any time to remove all machinery and fixtures placed on said premises, and further, upon the payment of One Dollar, at any time, by the party of the second part, to the part..... of the first part, said party of the second part shall have the right to surrender this lease for cancellation, after which all payments and liabilities to accrue under and by virtue of its terms shall cease and determine and this lease shall become absolutely null and void.

It is expressly understood and agreed that all agreements, terms and stipulations contained herein shall extend to respective heirs, successors, administrators or assigns of parties hereto.

Witness the following signatures and seals.

WITNESS:

..... (SEAL)
 (SEAL)
 (SEAL)
 (SEAL)



A.



B.

A. A nitroglycerine plant.

B. A storage magazine for nitroglycerine.

CHOOSING A WELL SITE.

When the lease is secured and the operator is ready to drill, he must choose the site for his first well. This is governed by one or two generally recognized rules or courtesies and many local circumstances. It is usually the custom to place wells about 210 feet inside the property line. This varies, however, with different depths of sand. Wells in the shallow fields are often placed 100 feet, or perhaps less, from the property lines. The drilling is usually inexpensive and many wells are drilled in the eager demand for the oil, with the result that such a field is quickly drained. The location lines in Crawford county are almost always maintained at the regular interval of 210 feet from the line but in the deep Lawrence county pools the distance is from 250 to 300 feet. The distance between wells on the same lease depends on expense and other factors. In the Clark and Crawford county fields they are generally placed 450 feet apart, but in Lawrence county, wells to the deeper sands are located 660 feet apart.

An unwritten law among operators in most fields requires the lessee to drill opposite producing wells on adjoining property. This is called "offsetting" and is done to protect property lines and prevent drainage of oil from the lease. It has been legally determined that a landowner can bring suit to make a lessee "offset" wells or else secure the surrender of the lease. It is the custom to offset all adjoining wells on the neighboring leases and leave the centers to be drawn upon. The free space in an 80-acre tract thus measures 900 by 2,250 feet. The line wells then draw to good advantage, and unnecessary center wells are avoided. It is a difficult matter to estimate the acreage drawn upon by oil wells. This is dependent upon the thickness and porosity of the sand, the area of the pool, and the location distances of the wells. It is estimated that about five acres are drawn upon by the Clark county wells, eight in Crawford county, and ten to twelve in Lawrence county. Without considering center wells, twelve to fourteen are drilled on an 80-acre tract in Clark and Crawford counties and from eight to ten in the Lawrence county field.

The choosing of a site may be affected, furthermore, by sudden dips in the sand about a regular location, thus breaking up the regularity of location lines. Further irregularity may be caused by the presence of buildings, permanent power houses, or unfavorable topographic features. It may seem advisable to even shift wells from a drift covered valley to the side of a hill where less expense is incurred in placing the drive-pipe. Well locations are often chosen in prospective areas with respect to the water and fuel supply. The advance of oil operators into active coal fields of the State may necessitate selection of well sites so as not to endanger mines and their employees.

DRILLING.

The third step in the development of oil properties is a contract between the operator and the drilling contractor. An agreement is drawn up between the two for the drilling at a certain price per foot, dependent upon the locality and the depth of the desired sand. A uniform rate is usually established by the supply houses in an active oil field. Drilling

in "wildcat" areas usually costs more than in a proven area because of the distance from railroads and the lack of material, fuel, water, etc. Deep sands and peculiar formations also affect the cost per foot of drilling.

Stipulations are made in the contract for drilling a specified depth and the contractor is held responsible for the well to that depth, or possibly to the extent of reaching the desired sand and determining its productivity. The agreement states that drilling shall begin within a specified time.

The contractor is responsible for the purchase and construction of the derrick. He furnishes boiler, string of tools, fuel, water, drillers and tool-dressers, and is held responsible for accidents. The contractor must replace the casing after a successful shot; clean out the well and pump it for a specified time free of charge, and tube the well. Should further cleaning be necessary after the time stated, a charge is usually made by the contractor for this service at the rate of \$15.00 per day and the operator furnishes fuel and water. A rate of \$2.50 per day is usually made for extra pumping. The contractor is permitted to use any oil or gas as fuel for drilling that he may find during the progress of his well. If the contractor experiences trouble in setting his casing, he is usually paid a reasonable amount for labor. In case a dry hole is secured the contractor must pull all the casing possible and in the event of a producing well he must draw that casing which is not desired in the well. In all events the contractor must put the well in order for pumping.

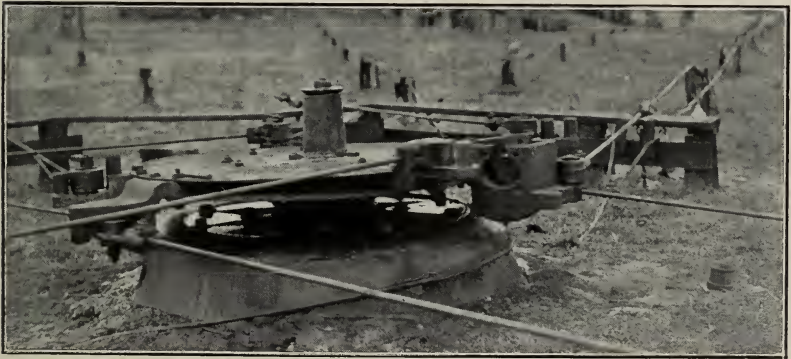
The operator, on his part, usually agrees to furnish conductor, drive-pipe, casing, tubing, and rodding. He provides for hauling the pipe and necessary accessories other than the driller's string of tools and rig. The operator is responsible for the plugging of a dry well and the filing of the affidavit thereto.

When the contract for drilling is signed, the operations pass into the hands of the contractor, who in turn contracts with the rig-builder. Nearly all rigs in the Illinois fields, outside of the Clark county pools and portions of Crawford county, are of the Standard type. (See Pl. XVI.) They are constructed of timber and consist of four strong up-rights held in the shape of a pyramid by ties and braces, and resting on strong wooden sills. This derrick is used as a support for the sheave or crown pulley, which must be of sufficient height—66 feet in the shallow fields and 72 feet in the deeper fields—to swing the long, heavy, drilling tools free from the derrick floor. A second pulley is fastened to the top to swing the bailer free.

Connected with the derrick are principally the bull-wheel and shaft on which is wound the cable supporting the drilling bit; the walking beam, giving vertical motion to the tools; the band wheels, transmitting power from the engine to the movable parts; and the sheds to protect the engine, bull-wheel, and shaft from inclement weather. When these main portions of the derrick with necessary minor details are complete, the rigbuilder has fulfilled his part of the contract. The contractor then sets his boiler in place, adjusts his engine; winds his cables; places his swinging cranes for lifting the drilling bits; and does many trivial things necessary to facilitate his work.



A.



B.

- A. Oil tanks under shed.
B. A pumping disc.

The construction of the standard rig requires about three days and costs about \$500.00. The same derrick can be used about twelve times, at an extra cost of about \$100.00 each time for tearing down and re-building and for additional repairs and materials.

The steel derrick (see Plate XVII) is used in some portions of the field, though not extensively. The uprights are of steel and the braces and ties are of wire, cable or thin steel rods. The sheds, shaft, and bull-wheels are of wood. The steel derrick can be torn down easily and moved indefinitely but its original expense is much greater than the standard derrick. The leading objection to the steel derrick is the probability of breaking or twisting pieces of the frame work during transportation and causing delay in expense and repair.

In the shallow fields a portable drilling rig is more often used than a permanent one. The whole outfit is mounted on a heavy wagon and includes a single high timber, fitted up as a derrick, while the remaining necessary parts are assembled in a compact manner back of it. This rig is not practical for deep sands or hard formations. There are two types of portable rigs, known as the "Star" and the "Parkersburg." Their cost, including all equipment, is about \$2,300.00. A larger type of portable drilling rig has been perfected recently that is suitable for deeper sand pools. The cost of this rig is about \$10,000.00.

The costs of drilling wells in Illinois has gradually declined since the opening of the Casey field in 1906. At that time the cost was \$1.00 per foot when fuel and water were not included, and 90 cents per foot when they were supplied. The following costs of drilling are representative for the various pools:

Cost of Drilling in Illinois Oil Fields.

Pools.	Depth.	Cost per foot.
Clark county, 400 to 500 feet.....		\$0 80
Crawford county, 750 to 1,000 feet, 1907.....		1 00
Crawford county, 750 to 1,000 feet, 1908.....		0 90
Crawford county, 750 to 1,000 feet, 1909-1910.....		0 80
Crawford county, 750 to 1,000 feet, 1911.....		0 70 to 0 85
Lawrence County—		
Bridgeport sands, 800 to 950 feet, with 10-inch drive-pipe and 6 5/8-inch casing.....		0 80
Bridgeport sands, with 16-inch drive-pipe and 8 1/4-inch casing		1 35
Buchanan sands, 1,250 to 1,400 feet.....		1 35
Kirkwood sands, 1,450 to 1,650 feet.....		1 50
Tracey sands, 1,700 to 1,750 feet.....		1 50
McClosky sands, 1,775 to 1,875 feet.....		1 50

The approximate time required to drill, shoot, clean, and put in order a well in the different pools is as follows:

Pool.	Days.
Clark county, or Shallow sands.....	4 to 5
Crawford county	10 to 12
Lawrence County—	
Bridgeport sands	10 to 12
Buchanan sand	20 to 25
Kirkwood sand	35 to 45
Tracey sand	60 to 75
McClosky sand	60 to 100

The Bridgeport sands were the first developed in Lawrence county and were drilled with the small sized pipe similar to that used in the Robinson sand of Crawford county which is at the same depth. Later when the deeper sands were discovered and found more prolific, it became impracticable to use $6\frac{1}{4}$ inch casing. To secure production from all sands, therefore, a larger size drive-pipe and $8\frac{1}{4}$ inch casing were introduced. The operators found it profitable to drill new wells with larger size pipe rather than redrill the older ones. The old wells were allowed to produce until abandonment and, indeed, there are many that are still producing. These lie close to the town of Bridgeport.

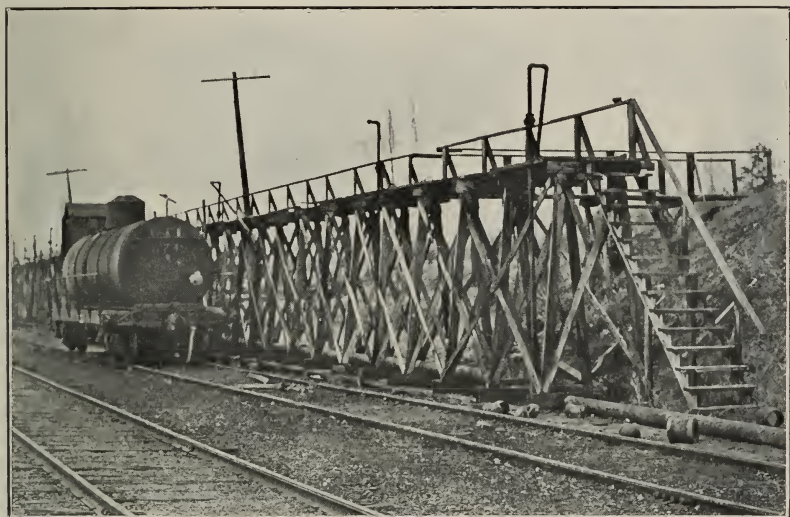
The drilling crew consists of two drillers and two tool-dressers, who work by pairs in shifts or "tours" of twelve hours each. It is the duty of the driller to stay close to the mouth of the bore, regulate the cable and temper screw when necessary, control the machinery, etc. The tool-dresser acts as an assistant, fires the boilers, attends to the engines, dresses or sharpens the bits, assembles the small tools, switches the bull-wheel cable, etc. The average daily wages of drillers is \$5.00 and of tool-dressers \$4.00.

The first process in the drilling of oil well is that of "spudding"—a method used in drilling the first 75 to 150 feet through what is known as the drift, and usually stopping at bed rock. The drift is composed of soil, sub-soil, clay, gravels, and sands, and is usually soft. A short cable is fastened by a shoe to the crank of the band wheel and to the general cable extending from the bull-shaft over the crown pulley and to the spudding drill in the well. As the band wheel turns, the short cable jerks the tools up and down. The bull-shaft is clamped while the spudding is going on and when it is released the cable and spudding drill are fed downward into the hole.

The hole is usually started in a large size conductor and the spudding apparatus is guided by hand. The regular drilling bit and stem are too long and heavy to manipulate for spudding.

When the spudding has been completed the stem and bit are substituted and are connected to the walking-beam and temper screw which lift the tools and cable at a varying rate of speed, dependent upon the depth of the well and the condition of the formations. The walking-beam rocks back and forth on an upright post independent of the derrick and so gives vertical motion to the cable and drill. The temper screw is fastened to the end of the walking-beam. The cable is clamped to the lower end of the screw and as it is necessary to lower the drill, a handle is turned and the tools are fed downward. The driller determines the lowering of the cable by the feel of the rope or its tension, and the temper screw is adjusted accordingly.

The temper screw varies in size from four to seven feet, the average screw-depth measuring five feet. The difference in length is due to the spring of the hemp cable. After a screw-depth of drilling has been accomplished the tools are withdrawn and a bailer is lowered in the hole. The bailer or sand bucket is a long section of hollow tubing with a ball and tongue valve at the bottom. As this is lowered into the thin mud and liquid at the bottom of the well, the valve opens and allows the bailer to fill. The weight of the liquid closes the valve as the bailer



A.



B.

- A. A modern tank-car loading rack.
B. An early tank-car loading rack.

is lifted. When the bailer touches the ground at the mouth of the well, the valve releases and the slush pours out.

It is customary to place drive-pipe through the drift to bed rock. A square hammer is usually fitted to the top of the stem. The stem rests inside the pipe as the hammer strikes the top of it. When a section is driven its length into the hole, a second section is then coupled to the first and the driving is continued. The driving of the pipe is manipulated with the same apparatus used for spudding. The first casing is usually driven through the first salt water sand and, in the event of a bad cave, also through the caved material. Casing is never driven until it becomes necessary to do so. In case the driving of the pipe is difficult, a sharp heavy shoe is attached to the bottom.

SHOOTING THE WELL.

When the oil-bearing stratum has been tapped and found productive the work is continued slowly until within a few feet of the bottom of the sand or until evidence of salt water appears. The driller notifies the operator who in turn arranges with the agent of a nitroglycerine company to bring the explosive and shoot the well. After the shooter has measured the sand accurately with a steel-line tape, he pours the nitroglycerine into tin shells $5\frac{1}{2}$ inches wide by 5 feet long, holding from 10 to 20 quarts each; and by means of a lowering line, pulley, and special releasing device, lowers them to the producing sand. The shells are conical at the lower end and concave at the upper, so as to fit snugly together. The top shell bears a water-proof percussion cap connected by a wire to an electric hand-battery above ground. A "Jack-squib" is often used to explode the shot. This is a tin tube, about 3 feet long containing a dynamite cap packed around with sand. A fuse is extended from the squib and is lighted and lowered. This is used when the hole is clean and not caving and when the casing is not pulled before the shot. In some cases the squib may contain a small quantity of nitroglycerine and be arranged to explode with a time fuse. The explosion opens a large cavity in the producing sand and cracks the bed for a wide radius, thus allowing the contained oil and gas to flow to the well. The greatest care is used in placing the shot in order not to disturb the overlying shales or the underlying sand, which usually contains salt water. If the shales are loosened to any extent they fill the cavity with debris and make the work of cleaning the well difficult. In case it is known that the lower sand does not contain salt water, drilling is carried through the sand and a pocket is made by the explosive to catch the caving material. If the salt water sand is tapped, a flow is often started that is difficult to control and which often drowns out the oil. In such a case the well is usually abandoned, although instances are known where the salt water head has been pumped off and a production of oil secured later. If it is desired to shoot the sand some distance from the bottom, an anchor, or supporting tube for the shot is placed at the bottom of the sand. If there are two producing sands close together two charges are set and an anchor, loaded with nitroglycerine, is placed between the sands. The explosion of the upper shot transmits the force to the second through the anchor.

The size of the shot depends upon the texture and thickness of the producing sand. It has been found that 30 feet of sand requires about 60 quarts of nitroglycerine. A charge of 80 to 100 quarts is sufficient for all sands in the Illinois fields. It is usually the custom to leave the 8 and 10-inch casing in the well and pull the casing near the producing sand previous to the shooting. This eliminates danger of collapsing or mangling. The casing is lowered later in cleaning the well.

About ten seconds after the shooter has discharged the explosive there is a quick jar of the earth, followed by a muffled report. With a roar the gas pours forth from the well in a bluish-white streak, followed, shortly, by a column of oil and water. This rises slowly to above the top of the derrick, where it sprays out in the direction of the wind. The rattling pebbles against the derrick, and the heavier thuds of large fragments on the ground are heard for several minutes. The column of oil subsides in a short time and the drillers cap the well or turn the flow into emergency tanks.

The shooters hold responsible positions and are chosen by the explosive manufacturers for their cool-headedness and skill. They receive salaries from \$100 to \$125 per month and usually a bonus for successful work and good behavior.

The torpedo company, through its shooter, is held responsible for the well from the moment of taking charge, and, if a premature shot takes place through carelessness or neglect, must arrange to drill another well immediately near the same location or pay for the ruined well. When the shot is successful the contractor resumes charge of the well and completes it by cleaning out and putting it in order for pumping. In all cases the shooter is required to know that the well is in perfect condition before shooting. It often occurs that after his explosive is partially set, the overlying formations cave and cover the shot. The shooter and drillers coöperate and clean out the well very cautiously to the top of the shot. Several days of the shooters time are thus required before he can complete his task, at an extra cost to the company.

The torpedo companies maintain manufacturing plants in isolated spots in each main field (see Pl. XVIII, A). Small storage magazines are built in other out-of-the-way places, usually one-half mile from any dwelling, so as to distribute the supply and avoid large loss in case of accident (see Pl. XVIII, B).

Special transportation is necessary to distribute the nitroglycerine. Large stock wagons supply the magazines and lighter wagons make distribution to the wells. The nitroglycerine wagon is built on strong but flexible springs, and is easily recognizable because of the height of the bed above ground. The bed of the wagon is fitted with square padded cells for each 10-quart can of liquid. The words "Nitroglycerine, Dangerous," are printed on the outside of each wagon and serve to notify the public of the nature of the vehicle. The shooter usually drives along unconcerned over bumps and ruts, confident of the security of his peculiar wagon. Accidents are rare, but they, sometimes, may be caused by collision or carelessness in pouring the liquid into the cans. A drop on the side of a can may be exploded by friction. The viscous liquid is safely poured by a steady hand.



A.



B.

A. A power or pumping house.
B. A boiler house.

Both liquid and solid nitroglycerine have been used in the field. The liquid explosive is a definite chemical compound, known as tri-nitro-cellulose. Glycerine is treated with a mixture of concentrated sulphuric and nitric acids at a temperature below 30° centigrade to prevent explosion. During the nitrating process water is given off and is absorbed by the sulphuric acid. The temperature of 30° centigrade is kept uniform and is effected by blown air during the mixing. The rate of mixing is slow and regular. After mixing the product is washed with water to remove the surplus acid. The solid nitroglycerine is made into cylindrical forms and has the appearance of a yellowish transparent jelly. It has the consistency of rubber and can be readily handled without danger, both during transportation and at the well.

The process and product are patented. The liquid explosive is preferred because of its efficiency. The standard prices for the explosive are as follows:

Quarts.	Value.
10	\$25 00
20	40 00
30	47 50
40	55 00
60 and more, per quart.....	1 15

Other charges include 2 cents per foot for electric wiring, and in case of delay, an extra charge of \$15.00 per day for the time of the shooter.

LEASE EQUIPMENT.

CLEANING OUT AND TUBING THE WELL.

After the well has been shot and a production of oil assured, the drillers clean it out in a manner similar to the original drilling. The bit is worked through any accumulated debris and the bailer brings up the slush. The pocket or cavity is emptied and thus serves as a reservoir. A two-inch tubing, containing a 5/8 inch sucker rod and cup, usually placed in the casing to the sand and is connected to the pumping machinery. If the well is the first one, the rod is set to pumping directly from the walking beam. If the well is one of several, it is connected to the power-house by a pumping jack. A three-inch tubing is often used if the well is a large one or large quantities of salt water are encountered. The cost of tubing is 11½ cents per foot. During the life of the well cups often become worn or loose and are repaired by the use of a portable cleaning rig. (See Pl. XXVII, B.)

TANKS.

The oil from the first well is sent to emergency tanks and from later wells to the lease tanks. The tanks are usually low cylinders, built of wooden staves and steel bands. They range from 100 to 1,600 barrels capacity. The smaller tanks are transported to a well when oil is found and are used to receive the supply until the permanent lease tanks are located and built. The usual 250-barrel tank measures 21½ barrels of oil to the inch or 25 barrels to ten inches of depth. The cost of this

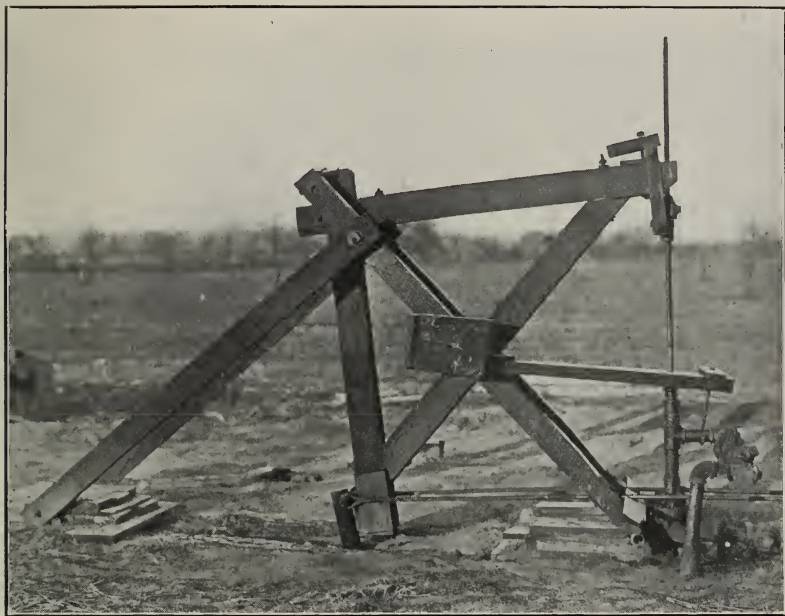
size tank is about \$90, and of the 1,600-barrel tank about \$450. Second-hand 250-barrel tanks cost about \$50 and are preferred because they are saturated with oil and less liable to leakage. When several tanks have been built on a lease, sheds are placed over them for protection from evaporation and to prevent their warping by the sun's heat. (See Pl. XIX, A.) The average cost of these is about \$60, although the cost is dependent upon the size.

LOADING RACKS.

The oil from a new field is generally sent by donkey-pump to the nearest railway loading-rack (see Pl. XX, B) and is shipped by tank-car to the refineries or to manufacturing companies who have use for crude oil. The racks are usually composed of upright tubing of about two or three inches in diameter with swinging ends that fit into the mouths of the tank cars. They are connected direct to the pipe lines from the lease. The loading racks that are maintained in the fields at present are provided with facilities for measuring the exact amounts of oil shipped (see Pl. XX, A). Loading racks are installed at Bridgeport and Lawrenceville on the Baltimore and Ohio railroad; Lawrenceville, Birds, Flat Rock, and Robinson, on the Big Four railroad; Robinson, Stoy, Bakers Lane, and Oblong on the Illinois Central railroad; Casey and Oilfield on the Cincinnati, Hamilton and Dayton railroad; and Casey and Martinsville on the Vandalia railroad.

POWER AND BOILER HOUSES.

With four or five wells on a lease it becomes practicable to build a centrally located power-house for pumping them. The walls of the building are constructed of wood or corrugated sheet-iron, and the floors of cement (see Pl. XXI, A). A gas engine is installed at one end of the building, and at the other end an oscillating pull-wheel to give horizontal movement to the surface rods radiating from it to the different wells. The pull-wheel draws the surface rod toward the power and the weight of the sucker rod in the well assists in pulling it back, thus providing the necessary balance of work. A boiler-house is built close to the power house for emergency use and for steaming the oil (see Pl. XXI, B). The average cost of the power-house and boiler-house is about \$1,200. The 25-H. P. gas engines cost \$425; the 35-H. P. engines, \$585; the Mascot power, \$320, and the boiler, \$385. One equipment serves as many as 40 wells, but usually only 25 to 30. The power man in charge can not look after more than this number and accomplish his daily work. The power man makes the rounds of inspection, cares for his engine, boiler and oil tanks, and makes a daily report. It often becomes necessary on the larger leases to employ a helper. He is called the "roust-a-bout" and assists the power man in looking after the wells. The power fuel is usually gas and is generally piped from the wells in the lease. Some leases do not produce gas and it is then bought from another lease or from a nearby gas line. Steam is used if the lease is isolated or gas cannot be secured.



A.



B.

- A. The standard pumping-jack.
B. The steel pumping-jack.

PULL-RODS AND PUMPING DISCS.

The surface pull-rods are generally made of steel or wire cable. They are supported in a level line to the well by posts of various lengths, depending upon the undulations of the farm. Notches are cut in the top of the posts for guiding the lines, and are greased occasionally to minimize the friction of the rod. Wells may be pumped in spite of intervening buildings or two wells may be attached to one general lead-line by the use of suitable angle-knees. Large flat, oscillating pumping discs are often used to overcome surface irregularities or obstructions, and for pumping across highways (see Pl. XIX, B). They are placed in the open field and are connected to the power by large pull-rods, which move alternately and turn the disc through an arc of about one-fifth of a circle. Surface rods radiate from the disc to the wells.

PUMPING JACKS.

The standard wooden jack, steel jack and "home-made" wooden jacks are used in Illinois. The standard jack is substantially mounted over the well on heavy wooden sills. (See Pl. XXII, A.) The workable portions resemble a right triangle, with the right angle pivoted, the upper acute angle fastened to the sucker rod, and the lower acute angle to the surface rod. The pull-wheel draws the lower angle outward and at the same time raises the upper angle and sucker rod. When the stroke is made the weight of the sucker rod pulls the jack to its normal position. The steel jack is similar to the standard wooden jack except for materials and weight. (See Pl. XXII, B.) With the home-made jack the angles are reversed and the action is one of pushing. (See Pl. XXIII, A.) Light weight jacks cost about \$10.00 and heavy ones about \$17.00. Sometimes wells are so arranged that the working balance between sucker and surface rods is uneven. In this case adjustment is made by weights upon the jack to push the sucker rod down or by weights at other points to aid the pull-rod.

REMOVAL OF SALT WATER AND STEAMING OIL.

Salt water often accompanies the oil into the tanks and by difference in weight finds its way to the bottom where it is withdrawn by opening a bung-hole. It is the usual practice to run the oil into separating tanks where a siphon is so set that the oil runs one way into the lease tanks and the water flows in another direction into nearby streams. The oil often roils and assumes a yellowish color when it is pumped too hard. This is due to a suspension of sulphur which interferes with refining. The removal of the sulphur and other impurities is accomplished by precipitation with steam, usually for three hours in a 250-barrel tank. The sediment is piped away from the bottom of the tank to a shallow pit some distance from the buildings, where it is burned and prevented from polluting the streams. (See Pl. XXIV, A.) The waste pit is a shallow hole in the ground surrounded by a small dike. It is usually constructed at a lower elevation than the tanks in order to provide a flow by gravity. A recent investigation by federal officials has put a stop to running waste oil into streams. It is claimed that

the waste has killed many fish and contaminated the water in the Embarrass and Wabash rivers. During freshets, it has saturated the foliage and underbrush along their tributaries, and in several cases, this was later destroyed by fire. (See Pl. XXIV, B.) The pollution of the streams is not only unsightly but the waste becomes offensive after having stood through the heat of a summer. It is true, however, that the streams cannot be freed entirely from waste because the surplus salt water must be taken care of. The present system of burning has greatly minimized the problem.

THE APPROXIMATE COST OF OIL WELLS.

The following table presents the approximate cost of the first wells and the lease equipment in the various Illinois pools:

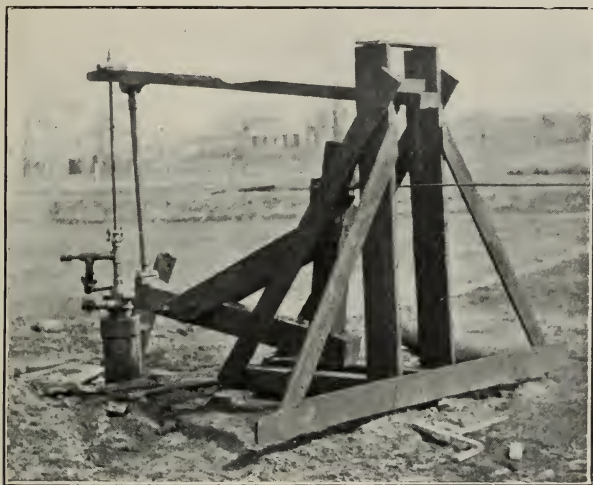
Cost of Wells and Their Equipment in Illinois.

Items.	Clark county.	Crawford county.	Lawrence county.				
			Bridgeport sand.	Buchanan sand.	Kirkwood sand.	Tracey sand.	McCloskey sand.
Rig.....		\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500
Drilling.....	\$ 360	700	750	1,750	2,300	2,500	2,800
Drive-pipe.....	80	90	90	90	90	90	90
Casing.....	250	800	900	1,700	2,800	3,400	3,800
Shooting.....	90	90	90	100	100	100	100
Tubing and pumping outfit.....	150	150	150	200	215	250	250
Power and boiler-house equipment.....	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Tanks and sheds.....	250	250	250	250	250	250	250
Belting and lead lines.....	100	100	100	100	100	100	100
Incidentals.....	100	100	100	100	100	100	100
Total.....	\$2,580	\$3,980	\$4,130	\$5,990	\$7,655	\$8,490	\$9,190

The above figures may be increased considerably if trouble is encountered in drilling the well or if the well is situated at a considerable distance from transportation. The second and succeeding wells cost less than the first one by about \$1,700.00 in Clark county, \$2,400.00 in Crawford county, \$2,300.00 for those in the Bridgeport sand, \$2,800.00 for those in the Buchanan sand, \$2,900.00 for those in the Kirkwood sand, \$3,500.00 for those in the Tracey sand, and \$3,800.00 for those in the McCloskey sand. The rig, drive-pipe, a portion of the casing, tanks and power and boiler-house equipment serve for several wells. The incidentals include the expenses of the operator and the cost of teaming, which is dependent upon available teamsters and the amount of work being done, but which averages \$4.50 per day. The weights of the various sizes of casing most commonly used are,

10-inch	32 lbs. per foot
8 1/4-inch	24 lbs. per foot
6 5/8-inch	13 lbs. per foot

The general cost of drive-pipe, casing, tubing and rodding is as follows:



A.



B.

- A. A third type of pumping-jack.
B. A town-lot well in Bridgeport, Ill.

Cost of Well Supplies in Illinois.

	Diameter— inches.	Cost per foot.
Drive-pipe.....	16	\$3.25
Casing (No. 50).....	12 $\frac{1}{2}$	2.15
Casing (St'd).....	12 $\frac{1}{2}$	1.24
Casing.....	10	1.09
Casing.....	8 $\frac{1}{2}$	0.728
Casing.....	6 $\frac{3}{4}$	0.5195
Casing.....	5 $\frac{1}{2}$	0.407
Tubing.....	2	0.12
Oil line.....	2	0.098
Gas line.....	2	0.885
Sucker-rods.....		*4.04
Pull-rods.....		*3.57

* Per hundred feet.

An idea of the enormous amount of casing and supplies used in the Lawrence county district is presented in Plate XXX.

THE COST OF OPERATING A LEASE.

The cost of operating a lease does not vary noticeably in the several Illinois pools and indeed is often negligible when compared with the earning power of the wells. The high cost of development, the interest on the investment, and the expense of plugging wells are the barriers to be overcome, particularly in the deep sand areas of Lawrence county before profits accrue to the operators. The shallow fields of Clark county have been among the most profitable in the world because of the low cost of development and the high returns. On the other hand the deep wells of Lawrence county have been just as profitable perhaps, but the expense of development has been very high. This was overcome by a high and steady production. The Crawford county area has been a valuable and safe field because of the steady yield of the wells and a rather low cost of development. The first wells in any field usually hold up better than later wells and naturally produce more oil, probably because the openings were made permanent under stress or pressure, etc. The essential feature in operating is to overcome first cost and the interest on the investment. In the shallow fields eight wells steadily making two and even one barrel per day are found to be profitable. One company has operated 100 old wells for two years that yielded totally, 150 to 300 barrels per day. The total cost of operation was \$600.00 per month. The yield of oil gave an average net income of \$3,000.00 per month, with a maximum of \$7,000.00 per month. The minimum cost of operating a lease should average about \$120.00 per month while the maximum should be about \$160.00. The pumper receives \$66.00 for care of a light lease and about \$72.00 for two small leases or a large one. The sum of \$20.00 is required for fuel, although the gas cost is usually low or nothing, and \$30.00 for teaming and supplies.

In a declining field, after the cost of development has been met, it has been found profitable to pump three or four wells of 5-barrel capa-

city. The monthly output from four 5-barrel wells, after deducting a royalty of one-sixth, is 500 barrels. At the current price of 67 cents per barrel January 1, 1912, the income is as follows:

Five hundred barrels at 67 cents	\$335 00
Cost of operating.....	140 00

Net income	\$170 00
------------------	----------

The net income from ten 5-barrel wells or five 10-barrel wells would be about \$700.00 per month.

INVESTMENTS IN OIL PROPERTIES.

Investments in oil properties fall naturally into two classes—those in the wild-cat, or unproven territory, and those in developed fields. One deals with chance and the other is largely a definite business venture.

An investment in a wild-cat scheme is at all times uncertain because there is no assurance of finding oil. Wild-cat work is necessary for the development of any oil territory, but it should be left, if possible, to those large companies which have a reserve fund for such purpose. These companies are in a position to drill several wells before oil is found or the venture abandoned. The basis of wild-cat work may be a geological study, surface seepage or a previous exploitation of some kind. The area in consideration is then leased, often in lots as much as 40,000 acres, which in case oil is found, would naturally protect the interests of the active operators. The only definite knowledge the prospecting company might have in unproven territory would be the result of the work of a competent geologist. This knowledge should lead the company from drilling in the basins, which would probably be full of salt water and afford little promise of the presence of oil, to raised structures where conditions for the accumulation of oil are more favorable. The drilling bit alone will give evidence of the actual presence of oil or its absence. The man of small means should, for his own protection, beware of venturing into new territory but should, if possible, join a responsible oil company that intends to purchase a proven property and develop it as such. He could lease and drill only in a limited area and one or two unsuccessful attempts would force him to abandonment. It has happened, however, that in some instances the small operator has been successful and has opened up a field, but experience proves that, generally, the case is otherwise.

Investments in developed fields are matters of calculation and judgment. A usual custom of a purchasing company is to send representatives into a field to carry on a ten-day gauge on those properties the buying of which is under consideration. At the end of this time the value of the property is rated at a definite amount per barrel of the average daily yield of the lease. The usual price per barrel for future production is about \$400, though it often reaches \$500 or more, if a property is particularly desirable. If a 40-acre lease produces steadily 500 barrels of oil per day, the buying price would be 500×400 or \$200,000.00. Under this investment a property with a reasonable decline should pay for itself in about three years. There is some opportunity



A.



B.

- A. A waste pit for burning waste oil.
B. The effect of fire from waste oil on streams.

of failure even in producing areas through a sudden drain of the sands or a flooding of the area with salt water.

The actual amounts of oil won per acre are variable. Some portions of the field have yielded 6,000 barrels per acre and are still producing, though not extensively. Other portions with wells equally good in initial production have yielded only 500 barrels or less per acre. One tract produced 10,000 barrels per acre and from another of 20 acres over a million barrels of oil were taken. The last was only possible because the owner built his own storage tanks and pumped constantly. It is evident that this shrewd gentleman secured some oil which would have gone to his neighbors had they been similarly provided with storage.

The deeper and more prolific sands of Lawrence county have yielded much greater quantities of oil and perhaps will continue to do so, because of the several producing sands and the remarkable staying qualities of the wells. This area will probably be productive for a good many years, as has been the case in the Appalachian region. The shallower fields to the north with one sand, or two or more lenses of the same sand, are already showing signs of decline. The combined daily output of the Clark, Cumberland and Edgar county wells on January 1, 1912, was about 9,000 barrels as against about 40,000 barrels in 1907. The Crawford county yield reached about 20,000 barrels daily, as against 100,000 barrels in 1907. The Lawrence county production has steadily increased since the first development and at the present time produces more than the rest of the counties combined and about double that of Crawford county.

Since the Illinois fields were discovered, many men wishing to invest have found that the field was completely leased and that the only opportunity to share in the business was to join an established company or to organize a new company to buy partially or wholly developed tracts. Even this has been difficult because of the enormous prices asked for good leases and the scarcity of stocks of organized and prosperous companies.

The transfer of oil properties has been common in the last two years and has comprised dealings in both developed and undeveloped leases. The Ohio Oil Company, the producing agent of the Standard Oil Company, has been the most active purchaser of producing properties in Illinois. It has recently bought out many large companies such as the Jennings Oil Company, Parker and Edwards, Riddle Oil Company, Brown and Hogue, The Lee Oil Company, The North Fork Oil Company, and other smaller companies. Before these purchases it owned and operated leases to the amount of about 40 per cent of the fields. Its total holdings now are probably more than 70 per cent of the total development. This company buys and stores more than 90 per cent of the oil of the State. How much of the production comes from its own leases is not known, but certainly not less than half.

BUYING, TRANSPORTING AND STORING OIL.

BUYING OIL.

When the oil is steamed and ready to be sold, the power man notifies the gauger of the Ohio Oil Company or the Indian Refining Company,

who determines the quality and quantity of oil on each lease. A report or "ticket" is made and signed by the gauger and lease man and copies are retained by each while an additional one is sent to the purchasing company's office. The purchasing company enters the report on its books and in a short time checks are made out individually to all parties interested in the transaction under what are termed division orders. A division order is a tabulated form including signed and sworn statements that the operator has a certain interest in a producing company or in a lease and that the landowner has a royalty, usually one-eighth of the oil. The division order is kept on file with the purchasing company. A producer can hold his oil in storage for two months, and at the expiration of that time checks are sent at the prevailing price. The purchasing company pro-rates its own leases as it does those of individual operators and issues royalty checks directly to the farmer. In all reports 3 per cent of the gauged oil is deducted for leakage, sediment and evaporation, which goes on continually until the oil reaches the refinery. This is a natural loss and is borne by all interested in the production.

The auditing department of the Ohio Oil Company, Marshall, Ill., has one of the most complete systems of its kind. The amount of work done by it is enormous, and its thoroughness is attested by the scarcity of complaints from either landowner or operator.

TRANSPORTING THE OIL.

The Ohio Oil Company is not a common carrier of oil, but is a buyer. The old system of carrying oil at a certain rate in addition to storage has disappeared. During 1907 and 1908 the Ohio Oil Company built an extensive system of gravity pipe-lines for collecting oil from the greater part of the field. E. C. Bolton, chief engineer, made thorough detailed surveys of all the leases and all the stream courses through or near the field. Advantage was taken of the slope of the streams and pipe-lines were laid along them. Branch lines were run to each lease so that the oil, when released from the lease tanks, flows by its own weight into the general stream main, and down its course to a sub-station, where it is caught and pumped back through a larger main to the head pumping station at Martinsville, Ill. There are thirteen sub-stations in the main fields and one at Sandoval, Ill., located as follows:

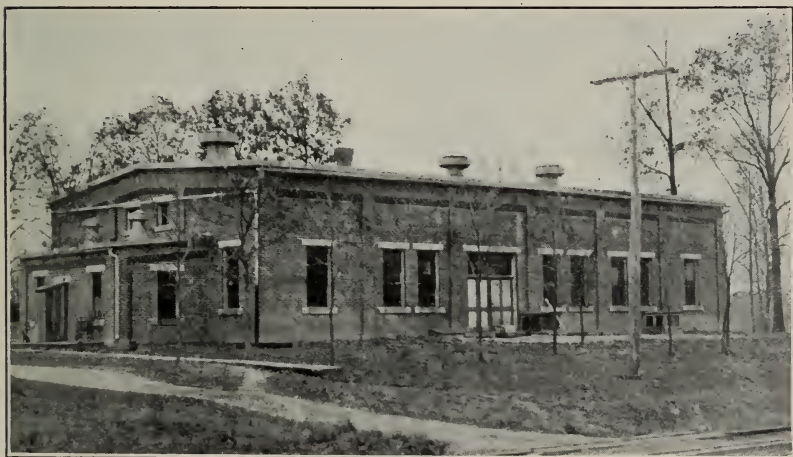
Location of the Ohio Oil Company's Pumping Stations in Illinois.¹

Order	Station—name.	Section.	Township.	County.
1	Martinsville.....	7	Martinsville.....	Clark.....
2	Stoy.....	2	Oblong.....	Crawford (see Pl. XXV A)....
3	Bridgeport.....	9	Lawrence.....	Lawrence (see Pl. XXVI)....
4	Casey.....	17	Casey.....	Clark.....
5	Cumberland.....	23	Union.....	Cumberland.....
6	Muddy Creek.....	20	Petty.....	Lawrence.....
7	North Fork.....	1	Licking.....	Crawford.....
8	Martinsville Tank Farm.....	13	Casey.....	Clark.....
9	Bailey.....	29	Martin.....	Crawford.....
10	Muchmore.....	14	Oblong.....	do.....
11	Tracey.....	13	Lawrence.....	Lawrence.....
12	Ackman.....	6	Dennison.....	do.....
13	Shipman.....	11	Martin.....	Crawford.....
14	Sandoval.....	7	Sandoval.....	Marion.....

¹ Kindly furnished by D. Roach, chief of pipe-line department, Ohio Oil Co., Marshall, Ill.



A.



B.

- A. The Ohio Oil Company's pumping station, Stoy, Ill.
B. The Tidewater Pipe Line Company's pumping station, Stoy, Ill.

Each station controls the area north of it to the next station. From the head station at Martinsville; the oil is pumped through one 12-inch and two 8-inch pipes across Indiana and Ohio to eastern refineries, and through one 8-inch to Alton, Ill. The inter-state pipe-lines are pumped in relays, with sub-stations at Jamestown and Montpelier, Ind., and at Lima, Ohio. Oil is pumped at about 600 pounds pressure in the lines.

Gravity has displaced the old donkey pump that was formerly required on each lease, except in the extreme northern end of the field. The gravity lines extend northward within 2½ miles south of Casey. The donkey pump is still used in this area. The Ohio Oil Company pays one cent per barrel to the producers for steam used. The efficiency of the gravity system is twice as great as with steam and the cost is one-third as great. The cost of transfer by the gravity system is borne by the Ohio Oil Company. A regular force of men, aside from the company's corps of surveyors is kept at work improving and repairing the lines. The company keeps apace with new development and supplies new lines at fast as they are needed.

The Ohio Oil Company maintains engineering and surveying, discharge, and telegraph departments in its general offices at Marshall, Ill. The engineering and surveying department surveys and outlines sites for pipe-lines, pumping stations, tank farms, power-houses, district supply-houses, etc. It makes all field, farm, tank-farm, road and pipeline maps. In fact, this branch of the work covers completely all the phases of work connected with civil engineering. It is occasionally called upon to make plans of specially needed machinery, or the construction of some special type of building. As yet these departments have done little toward determining structural relations of the formations and working out geological problems dependent upon this phase of work.

The discharge department has charge of the pumping of oil. This division merely regulates and checks the pumping of the oil into and through the interstate lines. The telegraph department of the company consists of a complete system of telegraph lines to all portions of the field, thus bringing its large force of employees into close touch with headquarters. Wires are also maintained and operated to eastern offices.

STORING THE OIL.

The production of the Illinois fields so far exceeds the capacity of pipe-lines that storage tanks have been established. Permanent tank farms are maintained at Martinsville, Stoy and Bridgeport. (See Pl. XXVII, A.) The sub-stations discharge the surplus oil to these tanks, where it lies until it can be pumped to the refineries. The Ohio Oil Company has 471 storage tanks which hold about 35,000 barrels each. These tanks are distributed in the oil producing counties of Illinois as follows:

Clark	235
Crawford	43
Lawrence	192
Marion	1
Total	471

The cost of each tank, including a circular dike for catching the oil in case the tank bursts or catches fire, is about \$9,000.00. The tanks are made of riveted steel plate, measuring $\frac{1}{2}$ inch thick at the bottom and on the floor, and 3-16 inch thick at the top. They are 95 feet in diameter and 28 feet $7\frac{1}{2}$ inches high. The floor space is 7,200 square feet. The total investment in tank-farms and equipment is about \$5,000,000.00. Other large companies maintain tanks, but they are scattered singly over the field.

Lightning has occasional heavy losses on tank farms. At least one dozen tanks have been destroyed in the last two years. (See Pl. XXVIII.) Lightning pierces the tanks easily and sets fire to the gases and oils. In a short time the top of the tank drops in and the flames send up dense, black, curling smoke, which presents a most unusual and startling spectacle. It requires about 24 hours for the entire contents of a tank to boil over its sides and 50 hours for the fire to burn out. At the time of boiling the smoke and danger are greatest. If the wind should be blowing strongly, any buildings, timber, or nearby tanks would probably be destroyed. The Ohio Oil Company always rushes a large force of men to the scene of a fire and takes every precaution to minimize the loss by strengthening the dike and removing inflammable material. The nearest pumping station is called upon to connect with the burning tank and draw out as much oil as possible with safety, usually about half the amount in the tank. The loss by fire of a tank full of oil is about \$20,000.00. The heat thrown off from a tank fire is intense and the effect on the tank is disastrous. (See Pl. XXIX.)

INDEPENDENT OIL COMPANIES.

The independent operators and oil companies have been forced to rely on tank-cars for oil shipments until recently, or to sell to the Ohio Oil Company. Most of them have preferred the latter plan. The Tide-water Pipe Line Company, with the Associated Producers Oil Company, however, has recently built an 8-inch line into the field and constructed a pumping station near Stoy, Crawford county, with a capacity of about 25,000 barrels daily. (See Pl. XXV, B.)

The Pure Oil Company which has been a large producer in this field, is said to have bought right of way for a second independent pipe-line. The Indian Refining Company of Cincinnati and New York has over 500 tank cars and 30 distributing stations, with refineries at Georgetown, Ky., Lawrenceville, and East St. Louis, Ill.; a combined capacity of about 8,000 barrels per day. The Sun Oil Company ships by tank cars and sells its oil for fuel. The Missouri-Illinois Oil Co. operates in St. Louis, Mo. The Central Refining Company has a refinery at Lawrenceville and secures oil from its own leases. The other companies that make shipments from the fields are the Cornplanter Refining Company, W. F. Watson of Bridgeport, Ill., and Rogers and Dibble of Oil City, Pa. It is estimated that the independents are handling between 9,000 and 12,000 barrels of oil per day. The Robinson Oil Refining Co. maintained a small plant at Robinson until the latter part of 1908, when it fell into the hands of a receiver and has since been idle.



The Ohio Oil Company's pumping station, Bridgeport, Ill.



PRICES AND PIPE-LINE RUNS OF ILLINOIS OIL.

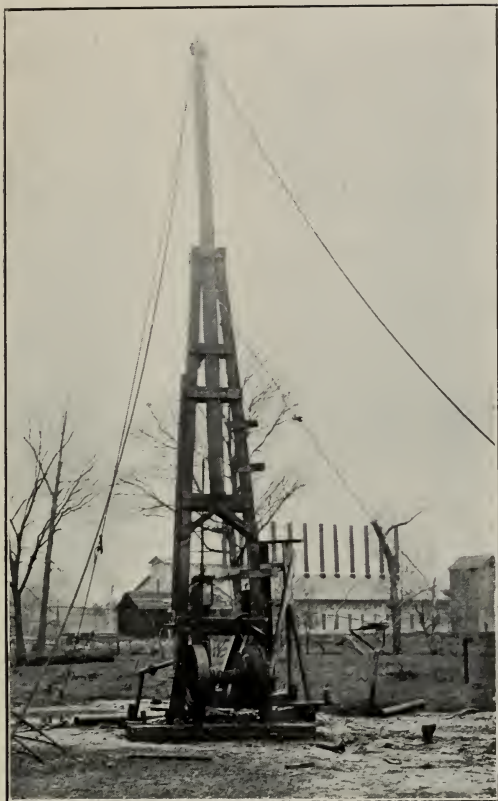
PRICES OF ILLINOIS OIL.

The price of Illinois oil increased steadily from the opening of the field in 1905 to July of 1906. From 1907 to November, 1909, the decline was gradual. The price then remained steady for 18 months and since May, 1911, has begun to increase. From 1905 to 1907 inclusive all oil sold at one price, varying from 60 to 83 cents per barrel. A grading and division in price took place in 1908. The better grades of oil were found to lie between 30 and 35° B, while that of the Duncanville pool lies between 22 and 23° B. The Duncanville oil is sold only for fuel. The development of the Tracey and McClosky sands in Lawrence county gave still higher grades of oil, varying from 35 to 39° B. The difference of gravities necessarily caused a division of price and since 1908, oil above 30° B has commanded one price while that below 30° B has commanded another. The following table gives the average monthly prices paid for Illinois petroleum from 1905 to 1910, inclusive, as reported by Dr. D. T. Day and to January 1, 1912, the date of completion of this report, as supplied by the writer:

Average Monthly Prices of Illinois Petroleum, 1905-1911, Per Bbl.¹

Month.	Year.										
	1905.	1906.	1907.	1908.		1909.		1910.		1911. ²	
				Above 30° B.	Below 30° B.	Above 30° B.	Below 30° B.	Above 30° B.	Below 30° B.		
January.....		\$.79	\$0.64	\$0.68	\$0.60	\$0.68	\$0.60	\$0.60	\$0.52	\$0.60	\$0.52
February.....		.79	.65½	.68	.60	.68	.60	.60	.52	.60	.52
March.....		.79	.67½	.68	.60	.68	.60	.60	.52	.60	.52
April.....		.80½	.68	.68	.60	.68	.60	.60	.52	.60	.52
May.....		.83	.68	.68	.60	.68	.60	.60	.52	.63	.55
June.....	\$0.60	.83	.68	.68	.60	.67½	.60	.60	.52	.65	.55
July.....	.60	.82½	.68	.68	.60	.63½	.60	.60	.52	.65	.55
August.....	.60	.71½	.68	.68	.60	.62	.60	.60	.52	.65	.55
September.....	.61	.64	.68	.68	.60	.62	.60	.60	.52	.67	.57
October.....	.64	.64	.68	.68	.60	.61½	.60	.60	.52	.67	.57
November.....	.66	.64	.68	.68	.60	.60	.60	.60	.52	.67	.57
December.....	.70	.64	.68	.68	.60	.60	.60	.60	.52	.67	.57
Average.....	\$0.644	\$0.745	\$0.67375	\$0.68	\$0.60	\$0.64625	\$0.56625	\$0.60	\$0.52	\$0.6383	\$0.5466

¹ Mineral Resources of the U. S., 1910, Part II, U. S. Geol. Survey, 1911, p. 387.² Compiled from files of the Oil City Derrick.



B.



A.

- A. A portion of the Ohio Oil Company's tank farm, Stoy, Ill.
B. A cleaning rig.

The Princeton, Indiana, Sandoval and Carlyle, Illinois oils are above 30° B. and are controlled by the market price of the better Illinois grades.

PIPE-LINE RUNS AND STOCKS OF ILLINOIS OIL.

The annual statistics of the production of petroleum in Illinois are compiled by Dr. D. T. Day of the U. S. Geological Survey and comprise the pipe-line runs of the Ohio Oil Company, Tidewater Pipe-line Company, and the Indian Refining Company, and the tank-car shipments of the Sun Oil Company, Cornplanter Refining Company, Indian Refining Company, Missouri-Illinois Oil Company, Central Refining Company, W. F. Watson of Bridgeport, Illinois, and Rogers and Dibble of Oil City, Pa. The actual production of oil is the amount which has been run from the producers tanks into the tanks of the transportation company, whether it is a railroad company or pipe-line, and from thence discharged through general pipe-lines to various refineries. The shipments recorded in the oil journals each month are used merely as a check to make accuracy more certain. The federal survey has in contemplation the collection of oil and gas statistics directly from the producer, thus placing a check on the general figures.

SUMMARY TABLES.

The total amount of oil produced previous to 1905, when the main fields were opened up, is almost negligible in comparison with the present annual production. The following brief table gives the yearly production from 1889 to 1911 inclusive:¹

Annual Production of Oil From Illinois Fields, 1889-1911.

Year.	Bbbls.
1889	1,460
1890	900
1891	675
1892	521
1893	400
1894	300
1895	200
1896	250
1897	500
1898	360
1899	360
1900	200
1901	250
1902	200
1903	0
1904	0
1905	181,084
1906	4,397,050
1907	24,281,973
1908	33,686,238
1909	30,898,339
1910	33,143,362
² 1911	31,317,038
Grand total	157,911,660

¹ Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 331.
² Day, D. T., Mineral Resources of the U. S., calendar year 1911, advance chapter, 1912, p. 64.

The two following tables present the ranks of the various petroleum-producing states for the years 1905-1910:

Rank of petroleum-producing States, with quantities and percentages produced by each, from 1905 to 1911, in barrels.

State.	Rank.	Quantity.	Percentage.	
1905. ¹				
California.....	1	33,427,473	24.81	
Texas.....	2	28,136,189	20.89	
Ohio.....	3	16,346,660	12.13	
Kansas.....	4	12,013,495	8.92	
Indian Territory.....				
Oklahoma.....	5	11,578,110	8.59	
West Virginia.....				
Indiana.....	6	10,964,247	8.14	
Pennsylvania.....	7	10,437,195	7.75	
Louisiana.....	8	8,910,416	6.61	
Kentucky.....	9	1,217,337	.90	
Tennessee.....				
New York.....	10	1,117,582	.83	
Colorado.....	11	376,238	.28	
Illinois.....	12	181,084	.14	
Wyoming.....	13	8,454	.01	
Michigan.....	14	3,100		
Missouri.....				
Total.....		134,717,580	100.00	
1906. ²				
California.....	1	33,098,598	26.17	
Kansas.....	2	21,718,648	17.17	
Indian Territory.....				
Oklahoma.....	3	14,787,763	11.69	
Ohio.....				
Texas.....	4	12,567,897	9.93	
Pennsylvania.....	5	10,256,893	8.11	
West Virginia.....	6	10,120,935	8.00	
Louisiana.....	7	9,077,528	7.18	
Indiana.....	8	7,673,477	6.07	
Illinois.....	9	4,397,050	3.47	
New York.....	10	1,243,517	.98	
Kentucky.....	11	1,213,548	.96	
Tennessee.....				
Colorado.....	12	327,572	.26	
Wyoming.....	13	7,000	.01	
Michigan.....	14	3,500		
Missouri.....				
Total.....		126,493,936	100.00	
1907. ²				
Oklahoma.....	1	45,933,649	27.65	
Kansas.....				
California.....	2	39,748,375	23.93	
Illinois.....	3	24,281,973	14.62	
Texas.....	4	12,322,696	7.42	
Ohio.....	5	12,207,448	7.35	
Pennsylvania.....	6	9,999,306	6.02	
West Virginia.....	7	9,095,296	5.48	
Indiana.....	8	5,128,037	3.09	
Louisiana.....	9	5,000,221	3.01	
New York.....	10	1,212,300	.73	
Kentucky.....	11	820,844	.49	
Tennessee.....				
Colorado.....	12	331,851	.20	
Utah.....	13	9,339	.01	
Wyoming.....	14	4,000		
Michigan.....				
Missouri.....				
Total.....		166,095,335	100.00	

¹ Griswold, W. T., Mineral Resources of the U. S. for 1906, U. S. Geol. Survey, 1907, p. 830.

² Day, D. T., Mineral Resources of the U. S. for 1907, Part II, U. S. Geol. Survey, 1908, p. 348.



A 35,000-barrel tank fire.

Table—Continued.

State.	Rank.	Quantity.	Percentage.
1908. ¹			
Oklahoma.....	1	45,798,765	25.65
California.....	2	44,854,737	25.13
Illinois.....	3	33,686,238	18.87
Texas.....	4	11,206,464	6.28
Ohio.....	5	10,858,797	6.08
West Virginia.....	6	9,523,176	5.33
Pennsylvania.....	7	9,424,325	5.28
Louisiana.....	8	5,788,874	3.24
Indiana.....	9	3,283,629	1.84
Kansas.....	10	1,801,781	1.01
New York.....	11	1,160,128	.65
Kentucky.....	12	727,767	.41
Colorado.....	13	379,653	.21
Wyoming.....	14	17,775	.01
Utah.....	15	15,246	.01
Missouri.....			
Michigan.....			
Total.....		178,527,355	100.00
1909. ¹			
California.....	1	55,471,601	30.28
Oklahoma.....	2	47,859,218	26.13
Illinois.....	3	30,898,339	16.87
West Virginia.....	4	10,745,092	5.87
Ohio.....	5	10,632,793	5.80
Texas.....	6	9,534,467	5.21
Pennsylvania.....	7	9,299,403	5.08
Louisiana.....	8	3,059,531	1.67
Indiana.....	9	2,296,086	1.25
Kansas.....	10	1,263,764	.69
New York.....	11	1,134,897	.62
Kentucky.....	12	639,861	.35
Colorado.....	13	310,861	.17
Wyoming.....	14	25,806	.01
Michigan.....	15		
Missouri.....	16		
Utah.....	17		
Total.....		183,170,874	100.00
1910. ²			
California.....	1	73,010,560	34.84
Oklahoma.....	2	52,028,718	24.83
Illinois.....	3	33,143,362	15.82
West Virginia.....	4	11,751,871	5.61
Ohio.....	5	9,916,370	4.73
Texas.....	6	8,899,266	4.25
Pennsylvania.....	7	8,794,662	4.20
Louisiana.....	8	6,841,395	3.26
Indiana.....	9	2,159,725	1.03
Kansas.....	10	1,128,668	.54
New York.....	11	1,053,838	.50
Kentucky.....	12	468,774	.22
Colorado.....	13	239,794	.12
Wyoming.....	14	119,045	05
Utah.....	15		
Michigan.....	16		
Missouri.....	17		
Total.....		209,556,048	100.00
1911. ³			
California.....	1	81,134,391	36.80
Oklahoma.....	2	56,069,637	25.44
Illinois.....	3	31,317,038	4.21
Louisiana.....	4	10,720,420	4.86
West Virginia.....	5	9,795,464	4.44
Texas.....	6	9,526,474	4.32
Ohio.....	7	8,817,112	4.01

¹ Day, D. T., Mineral Resources of the U. S. for 1909, Part II, U. S. Geol. Survey, 1911, p. 304.² Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 329.³ Day, D. T., Mineral Resources of the U. S. for 1911, advance chapter, 1912, U. S. Geol. Survey, p. 10.

Table—Concluded.

State.	Rank.	Quantity.	Percentage.
1911.			
Pennsylvania.....	8	8,248,158	3.74
Indiana.....	9	1,695,289	.77
Kansas.....	10	1,278,819	.58
New York.....	11	952,515	.43
Kentucky.....	12	472,458	.22
Colorado.....	13	226,926	.10
Wyoming.....	14	194,690	.09
Missouri.....	15		
Utah.....	16		
Michigan.....	17		
Total.....		220,449,391	100.00

Rank of petroleum-producing States, with value of production and percentage of each, from 1905-1919.

State.	Rank.	Value.	Percentage.
1905. ¹			
Ohio.....	1	\$17,054,877	20.27
West Virginia.....	2	16,132,631	19.17
Pennsylvania.....	3	14,653,278	17.41
Indiana.....	4	9,404,909	11.18
California.....	5	8,201,846	9.74
Texas.....	6	7,552,262	8.97
Kansas.....	7	6,546,398	7.78
Indian Territory.....			
Oklahoma.....			
Louisiana.....	8	1,601,325	1.90
New York.....	9	1,557,630	1.85
Kentucky.....	10	943,211	1.12
Tennessee.....			
Colorado.....	11	337,606	.40
Illinois.....	12	116,561	.14
Wyoming.....	13	54,865	.07
Michigan.....			
Missouri.....			
Total.....		\$84,157,399	100.00
1906. ¹			
Ohio.....	1	\$16,997,000	18.39
Pennsylvania.....	2	16,596,943	17.95
West Virginia.....	3	16,170,293	17.49
Kansas.....	4	9,615,198	10.40
Indian Territory.....			
Oklahoma.....			
California.....	5	9,553,430	10.34
Indiana.....	6	6,770,066	7.32
Texas.....	7	6,565,578	7.10
Louisiana.....	8	3,557,838	3.85
Illinois.....	9	3,274,818	3.54
New York.....	10	1,995,377	2.16
Kentucky.....	11	1,031,629	1.12
Tennessee.....			
Colorado.....	12	262,675	.28
Wyoming.....	13	53,890	.06
Michigan.....			
Missouri.....			
Total.....		\$92,444,735	100.00
1907. ²			
Oklahoma.....	1	\$18,478,658	15.38
Kansas.....			
Pennsylvania.....	2	17,579,706	14.64

¹ Griswold, W. T., Mineral Resources of the U. S., 1906, U. S. Geol. Survey, 1907, p. 830.² Day, D. T., Mineral Resources of the U. S. 1907, Part II, U. S. Geol. Survey, 1908, p. 349.



The tank after the fire.

Table—Continued.

State.	Rank.	Value.	Percentage.
1907.			
Illinois.....	3	\$16,432,947	13.68
West Virginia.....	4	15,852,428	13.20
Ohio.....	5	14,769,888	12.30
California.....	6	14,699,956	12.24
Texas.....	7	10,401,863	8.66
Indiana.....	8	4,536,930	3.78
Louisiana.....	9	4,063,033	3.38
New York.....	10	2,127,748	1.77
Kentucky.....	11	862,396	.72
Tennessee.....			
Colorado.....	12	272,813	.23
Utah.....	13	28,383	.02
Wyoming.....			
Michigan.....			
Missouri.....			
Total.....		\$120,106,749	100.00
1908. ¹			
California.....	1	\$23,433,502	18.15
Illinois.....	2	22,649,561	17.55
Oklahoma.....	3	17,694,843	13.71
West Virginia.....	4	16,911,865	13.10
Pennsylvania.....	5	16,881,194	13.08
Ohio.....	6	14,178,502	10.98
Texas.....	7	6,700,708	5.20
Louisiana.....	8	3,503,419	2.71
Indiana.....	9	3,203,883	2.48
New York.....	10	2,071,533	1.60
Kansas.....	11	746,695	.58
Kentucky.....	12	706,811	.55
Colorado.....	13	346,403	.27
Missouri.....	14	50,265	.04
Utah.....			
Wyoming.....			
Michigan.....			
Total.....		\$129,079,184	100.00
1909. ²			
California.....	1	\$30,756,713	23.97
Illinois.....	2	19,788,864	15.42
West Virginia.....	3	17,642,283	13.75
Oklahoma.....	4	17,428,990	13.58
Pennsylvania.....	5	15,424,554	12.02
Ohio.....	6	13,225,377	10.31
Texas.....	7	6,793,050	5.30
Louisiana.....	8	2,022,449	1.58
Indiana.....	9	1,997,610	1.55
New York.....	10	1,878,217	1.46
Kentucky.....	11	518,299	.40
Kansas.....	12	491,633	.38
Colorado.....	13	318,162	.25
Wyoming.....	14	42,286	.03
Missouri.....	15		
Michigan.....	16		
Utah.....	17		
Total.....		\$128,328,487	100.00
1910. ²			
California.....	1	\$35,749,473	27.95
Oklahoma.....	2	19,922,660	15.58
Illinois.....	3	19,669,383	15.38
West Virginia.....	4	15,720,184	12.29
Pennsylvania.....	5	11,908,914	9.31
Ohio.....	6	10,651,568	8.33
Texas.....	7	6,605,755	5.16
Louisiana.....	8	3,574,069	2.80
Indiana.....	9	1,568,475	1.21

¹ Day, D. T., Mineral Resources of the U. S., 1909, Part II, U. S. Geol. Survey, 1911, p. 306.² Day, D. T., Mineral Resources of the U. S., 1910, Part II, U. S. Geol. Survey, 1911, p. 330.

Table—Concluded.

State.	Rank.	Value.	Percentage.
1910.			
New York.....	10	\$1,414,688	1.11
Kansas.....	11	444,763	.35
Kentucky.....	12	324,684	.25
Colorado.....	13	243,402	.20
Wyoming.....	14	98,330	.08
Utah.....	15		
Michigan.....	16		
Missouri.....	17		
Total.....		\$127,896,328	100.00
1911. ¹			
California.....	1	\$38,719,080	28.89
Oklahoma.....	2	26,451,767	19.73
Illinois.....	3	19,734,339	14.72
West Virginia.....	4	12,767,293	9.52
Pennsylvania.....	5	10,894,074	8.13
Ohio.....	6	9,479,542	7.07
Texas.....	7	6,554,552	4.89
Louisiana.....	8	5,668,814	4.23
New York.....	9	1,248,950	.93
Indiana.....	10	1,228,835	.92
Kansas.....	11	608,756	.45
Kentucky.....	12	328,614	.25
Colorado.....	13	228,104	.17
Wyoming.....	14	132,032	.10
Utah.....	15		
Missouri.....	16		
Michigan.....	17		
Total.....		\$134,044,752	100.00

The total production in Illinois, by months, for the last six years is given in the following table:²

Production of petroleum in Illinois, 1905-1911, by months, in bbls.

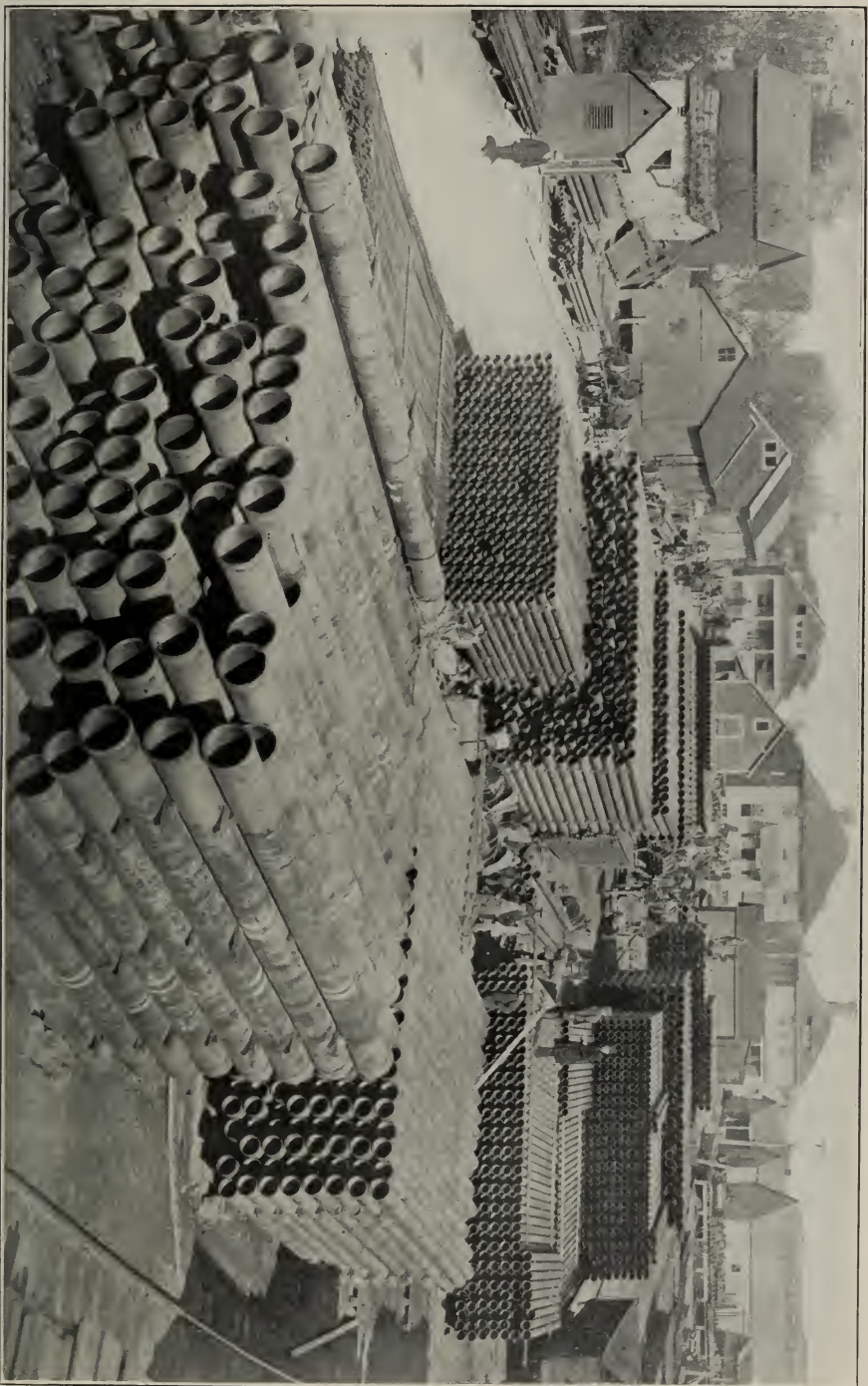
Month.	Year.						
	1905.	1906.	1907.	1908.	1909.	1910.	1911. ³
January.....		55,680	781,812	2,703,973	2,668,607	2,640,303	2,578,579
February.....		65,208	956,399	2,572,115	2,510,548	2,353,684	2,373,229
March.....		19,352	1,547,323	2,825,491	2,757,794	2,865,055	2,790,515
April.....		102,862	1,874,465	3,249,690	2,562,215	2,776,800	2,560,963
May.....		267,746	2,138,918	3,223,515	2,829,277	2,860,760	2,731,965
June.....	6,521	410,655	1,879,362	3,081,848	2,670,549	2,746,620	2,634,521
July.....	17,306	610,401	2,422,192	2,693,288	2,728,857	3,029,787	2,740,654
August.....	23,827	778,464	2,446,042	2,808,667	2,719,958	3,007,151	2,770,946
September.....	26,586	722,168	2,605,663	2,675,385	1,902,197	2,850,119	2,615,120
October.....	27,589	463,819	2,863,812	2,709,913	2,560,072	2,768,750	2,638,927
November.....	34,611	350,985	2,510,146	2,479,926	2,497,847	2,629,132	2,400,670
December.....	44,644	549,710	2,255,839	2,662,427	2,490,418	2,615,201	2,480,949
Total.....	181,084	4,397,050	24,281,973	33,686,238	30,898,339	33,143,362	31,317,038

The following table shows the value of Illinois oil produced from 1905-1911:

¹ Day, D. T., Mineral Resources of the U. S., 1911, advance chapter, U. S. Geol. Survey, 1912, p. 10.

² Mineral resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 385.

³ Day, D. T., Mineral Resources of the U. S. for 1911, advance chapter, 1912, U. S. Geol. Survey, p. 64.



A supply yard in Bridgeport.

Production and value of petroleum in Illinois, 1905-1911, in bbls.

Year.	Production.			Total value.
	Ohio Oil Co.	Other lines.	Total quantity.	
1905.....	156,503	24,581	181,084	\$ 116,561
1906.....	4,385,471	11,579	4,397,050	3,274,818
1907.....	23,733,790	548,183	24,281,973	16,432,947
1908.....	31,972,634	1,713,604	33,686,238	22,649,561
1909.....	27,640,773	3,257,566	30,898,339	19,788,864
1910.....	27,751,090	5,392,272	33,143,362	19,669,383
1911.....	25,987,480	5,329,558	31,317,038	19,734,339
Total.....			157,905,084	\$101,666,473

The following table presents kind and amount of petroleum produced in Illinois from 1909 to 1911, in barrels:¹

Year.	Light.	Heavy.	Total.
1909.....	28,049,468	2,848,871	30,898,339
1910.....	30,444,279	2,699,083	33,143,362
1911.....	29,103,220	2,213,818	31,317,038

The following table shows the pipe-line runs of the Ohio Oil Company in Illinois from 1905-1911, by months, in barrels:

*Pipe-line runs.*²

Month.	1905.	1906.	19.7.	1908.	1909.	1910.	1911. ^a
January		55,680	752,671	2,497,359	2,494,492	2,220,842	2,137,674
February		65,208	918,620	2,464,914	2,358,198	1,976,637	1,968,429
March		19,352	1,494,598	2,591,911	2,568,392	2,377,012	2,349,208
April		102,862	1,823,025	3,089,417	2,388,309	2,306,336	2,138,500
May		267,746	2,094,195	3,084,816	2,536,413	2,374,134	2,264,925
June	5,489	410,655	1,830,634	2,965,786	2,365,956	2,274,501	2,177,280
July	9,208	610,401	2,376,281	2,579,977	2,413,218	2,569,830	2,265,374
August	15,092	778,464	2,398,895	2,690,931	2,411,483	2,528,532	2,312,973
September	19,592	722,168	2,560,593	2,555,871	1,595,934	2,409,232	2,154,693
October	26,444	463,819	2,818,032	2,582,561	2,228,269	2,334,659	2,172,457
November	34,766	350,985	2,464,981	2,356,386	2,149,372	2,211,286	1,977,073
December	45,912	538,131	2,201,265	2,512,705	2,130,737	2,168,089	2,068,894
Total	156,503	4,385,471	23,733,790	31,972,634	27,640,773	27,751,090	25,987,480

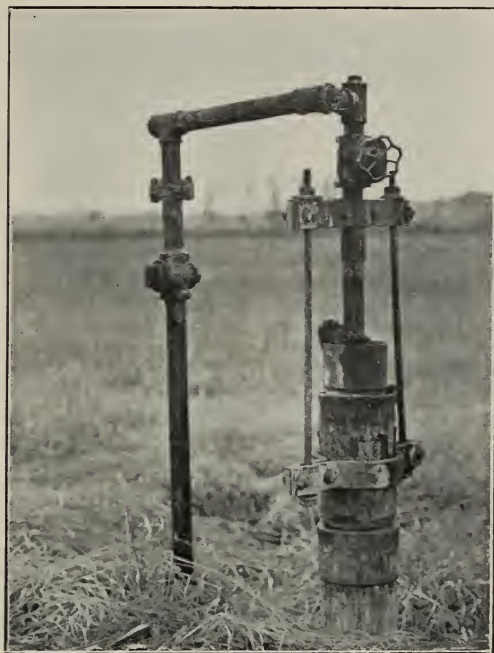
The table below gives the gross stocks held by the Ohio Oil Company, and the eastern lines operating in Illinois from 1907 to 1911, by months, in barrels:

¹ Loc. cit.² Day, D. T., Mineral Resources of the U. S., 1910, Part II, U. S. Geol. Survey, 1911, p. 385.³ Mineral Resources of the U. S., 1911, advance chapter, 1912, U. S. Geol. Survey, p. 65.

Stocks of the Ohio Oil Company and Eastern lines in Illinois, 1907-1911, by months, in bbls.

Months.	Gross stocks.							
	1907.		1908.		1909.		1910.	
	Ohio Oil Co. ¹	Eastern lines. ²	Ohio Oil Co. ¹	Eastern lines. ²	Ohio Oil Co. ¹	Eastern lines. ²	Ohio Oil Co. ²	Eastern lines. ²
January.....	2,509,598	.....	14,129,954	.....	25,876,529	3,325,613	28,355,182	3,340,116
February.....	3,040,111	.....	15,069,278	2,086,609	26,203,238	3,386,803	28,356,243	3,138,018
March.....	4,117,635	.....	15,973,653	2,919,608	26,630,509	3,726,418	28,373,855	3,637,610
April.....	5,328,739	.....	17,420,334	3,189,075	26,856,675	3,580,142	28,393,365	3,216,907
May.....	7,117,033	.....	19,077,020	2,912,737	27,533,494	2,894,212	29,023,647	3,148,509
June.....	8,448,344	.....	20,456,387	3,049,094	27,899,220	2,922,182	29,106,098	3,724,919
July.....	9,387,999	.....	21,036,143	3,452,404	27,627,086	3,408,835	29,198,965	4,187,362
August.....	10,355,000	.....	22,267,197	3,203,173	27,683,334	4,071,808	29,177,382	4,141,713
September.....	12,557,522	.....	23,485,690	2,726,598	28,399,427	3,646,595	28,879,676	4,066,122
October.....	13,724,691	.....	24,396,787	2,852,588	28,535,636	2,913,877	28,492,136	3,455,197
November.....	14,275,036	.....	24,905,168	3,297,260	28,373,985	2,854,051	28,086,619	2,996,608
December.....	15,571,305	.....	25,252,468	3,572,263	28,671,543	3,351,947	27,348,358	3,240,387
							19,131,678	.....

¹ Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 386.² Compiled from files of the Oil City Derrick.



A.



B.

A. A gas well.

B. A gas well with a water retainer.

The following table shows the quantity of petroleum shipped by railroad from the Illinois oil fields, 1906 to 1911, by months. The amounts were estimated by Dr. D. T. Day of the U. S. Geological Survey, on the basis of 7.16 pounds to the gallon in 1906, and from 296.476 to 321.17 pounds to the barrel in 1907 to 1911:

Rail shipments of oil from Illinois, 1906-1911, by months.

Month.	1906. ¹	1907. ²	1908. ³	1909. ⁴	1910. ⁵	1911. ³
January.....	60,134	8,701	91,807	144,511	220,856	228,404
February.....	51,358	14,598	71,170	111,407	217,917	224,856
March.....	16,009	23,947	132,300	152,056	263,056	254,927
April.....	35,539	42,249	118,074	109,872	257,292	347,530
May.....	160,121	158,227	84,290	157,783	283,285	333,324
June.....	358,039	166,644	122,317	183,432	285,095	329,621
July.....	515,956	322,622	107,688	158,642	276,533	311,681
August.....	534,821	223,134	70,171	166,943	277,317	297,784
September.....	368,625	70,555	83,042	173,509	253,788	238,917
October.....	162,547	56,570	102,163	200,067	213,217	292,004
November.....	48,747	56,080	138,147	198,044	287,750	263,627
December.....	30,843	66,692	126,967	185,166	234,819	285,082
Total.....	2,342,739	1,210,019	1,248,136	1,941,432	3,070,925	3,407,757

¹ Shipments were made from loading racks at Bridgeport, Oilfield and Stoy. The railroads were the Vandalia; the Baltimore & Ohio; the Cincinnati, Hamilton & Dayton; and the Indianapolis Southern.

² Shipments were made from loading racks at Duncansville, Lawrenceville, Stoy, Robinson, Bridgeport, Oilfield and Casey. The railroads were the Vandalia; the Baltimore & Ohio; the Cincinnati, Hamilton & Dayton; the Indianapolis Southern and the Cleveland, Cincinnati, Chicago & St. Louis.

³ Shipments were made from Duncansville, Lawrenceville, Stoy, Robinson, Bridgeport, Sparta and Casey. The railroads were the Vandalia; the Baltimore & Ohio; the Illinois Southern; the Indianapolis Southern; and the Cleveland, Cincinnati, Chicago & St. Louis.

⁴ Shipments were made from Duncansville, Flat Rock, Lawrenceville, Stoy, Robinson, Bridgeport, Casey, and Sparta, the same railroads shipping in 1909 as in 1908. The number of tank cars shipped in 1909 was 11,820.

⁵ Shipments were made from Duncansville, Flat Rock, Lawrenceville, Stoy, Sandoval, Bridgeport, Casey and Sparta, the same railroads shipping in 1910 as in 1908 and 1909. The number of tank cars shipped in 1910 was 17,049.

The following table gives the statistics of field operations since 1905:

Number of wells completed and the total and average initial petroleum of new wells in Illinois, 1906-1911, by counties.¹

County.	Completed.					Productive.					Dry.				
	1906.		1907.		1911. ²	1906.		1907.		1911. ²	1906.		1907.		1911. ²
	1906.	1907.	1908.	1909.	1910.	1906.	1907.	1908.	1909.	1910.	1906.	1907.	1908.	1909.	1910.
Bond.....	1,337	1,176	385	181	7	1,173	975	298	134	1	164	201	87	47	6
Clark.....					112					80	41				32
Clinton.....	65	56	9	12	5	51	45	8	9	4	2	11	1	3	27
Crawford.....	1,060	2,322	2,464	2,093	1,210	896	2,464	1,986	1,738	950	164	376	336	355	260
Cumberland.....	558	152	42	33	17	505	139	31	23	13	53	13	11	10	4
Edgar.....	37	25	9	6	2	21	11	7	2		16	14	2	4	2
Jackson.....				3	2		1		1					2	2
Jasper.....				18	8				7		3			11	4
Lawrence.....	176	691	762	724	669	143	621	684	608	584	33	70	78	56	95
Macoupin.....				9	2				1					8	2
Madison.....				2	1				1					1	1
Marion.....				23	60				6	34				17	26
Randolph.....				12					2					10	11
Saline.....				2	1				1					1	1
Miscellaneous.....	50	48	45	33	33	4	5	5		1	46	43	40	33	32
Total.....	3,283	4,988	3,574	3,151	2,139	2,793	4,260	3,019	2,593	1,671	490	728	555	558	2468
					1,364					1,057					4305

¹ Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, pp. 387-388.

² Compiled from files of Oil City Derrick.

³ Includes 75 gas wells.

⁴ Includes 41 gas wells.

Number of Wells Completed—1906-1911—Concluded.

County.	Total initial production.					Average initial production per well.						
	1906.	1907.	1908.	1909.	1910.	1911. ¹	1906.	1907.	1908.	1909.	1910.	1911.
Bond.....	31,060	20,385	6,953	3,219	25	811	26.5	20.9	23.3	24.0	25.0	19.7
Clark.....					1,802	11,681					22.8	94.9
Clinton.....	279	314	122	95	65	10	5.5	7.0	15.3	10.6	16.2	5.0
Crawford.....	59,204	84,163	46,694	44,379	26,382	9,802	66.1	34.2	23.5	25.5	27.8	26.5
Cumberland.....	15,115	3,612	303	558	162	125	29.9	26.0	9.8	24.3	12.4	17.8
Edgar.....	101	118	45	10			4.8	10.7	6.4	5.0		
Jackson.....				3						3.0		
Jasper.....				50	40	20				7.1	10.0	6.6
Lawrence.....				41,056	61,015	40,432	50.6	49.2	36.2	61.5	102.7	86.7
Macoupin.....	7,230	30,543	24,793	5		7				5.0		
Madison.....				10						10.0		
Marion.....				223	3,760	4,025				37.2	110.6	91.4
Randolph.....				145						72.5		
Saline.....				3						3.0		
Miscellaneous.....	23	28	50		5	6	5.8	5.6	10.0		5.0	3.0
Total.....	113,012	139,163	78,960	89,756	93,256	66,919	40.5	32.7	26.2	34.6	55.5	63.3

¹ Compiled from files of Oil City Derrick.

Number of wells completed in Illinois, 1906-1911, by months.¹

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	253	356	351	108	253	359	435	496	449	453	376	354	3,283
1907.....	303	187	351	387	493	639	521	461	400	363	430	334	4,988
1908.....	213	224	216	197	264	390	474	417	344	290	273	278	3,574
1909.....	111	158	128	203	321	342	303	303	282	242	223	176	3,151
1910.....	104	89	71	157	192	211	172	235	234	198	177	166	2,130
1911.....				81	117	147	127	146	138	107	129	108	1,364

¹ Day, D. T., Mineral Resources of the U. S. in 1910, Part II, U. S. Geol. Survey, 1911, p. 388.*Number of dry holes drilled in Illinois, 1906-1911, by months.¹*

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	41	55	60	20	37	41	69	82	69	47	64	61	490
1907.....	55	22	37	40	64	75	72	45	62	52	80	52	728
1908.....	41	47	45	33	35	54	65	55	49	51	47	52	555
1909.....	17	43	29	38	45	53	50	57	50	48	52	32	558
1910.....	22	25	15	16	33	43	26	27	48	30	39	38	248
1911.....									38	17	25	18	805

¹ Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 388.² Includes 75 gas wells.³ Includes 41 gas wells.*Total initial daily production of new wells in Illinois, 1906-1911, by months, in barrels.¹*

Year.	Jan.	Feb.	March.	April.	May.	June.	July. [*]	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	9,433	9,842	10,392	3,736	8,137	17,148	15,262	22,432	9,705	14,039	10,611	11,942	113,012
1907.....	6,144	3,329	4,133	11,083	13,329	18,807	17,375	11,240	10,967	8,157	9,780	8,758	139,163
1908.....	5,060	4,833	5,018	4,237	6,681	9,856	9,475	8,322	7,848	6,091	6,242	6,607	78,960
1909.....	5,331	6,840	5,593	7,460	8,091	9,050	9,820	8,661	8,324	8,904	9,628	7,540	89,756
1910.....	5,677	3,512	3,909	5,587	5,132	9,267	6,386	10,042	8,419	10,133	8,832	7,062	98,256
1911.....						5,850	9,058	7,578	6,576	4,782	5,826	3,432	66,919

¹ Loc. cit.

Petroleum field report in 1910, by counties.

County.	Wells.			Acreage.		
	Productive, Dec. 31.	Abandoned	Drilling, Dec. 31.	Fee.	Lease.	Total.
Clark.....	2,341	124	.....	1,065	58,515	59,580
Coles.....	67	1	.....	140	575	715
Crawford.....	6,652	217	15	913	102,737	103,650
Cumberland.....	677	4	.....	.....	6,221	6,221
Edgar.....	6	1	.....	530	80	610
Jersey.....	.....	.....	.....	.....	.....	.....
Lawrence.....	2,411	38	30	329	80,615	80,944
Macoupin.....	.....	.....	1	.....	23,793	23,793
Madison.....	.....	.....	.....	.....	11,486	11,486
Marion.....	12	.....	4	407	35,920	35,920
Randolph.....	5	.....	.....	.....	493	900
Miscellaneous (undevel'd).....	.....	.....	.....	.....	84,760	84,760
Total.....	12,171	385	50	3,384	405,195	408,579

On January 1, 1912, it was estimated that 19,982 wells had been drilled in Illinois. Of these 3, 152 or 15.7 per cent were barren. There were 84 wells abandoned in 1910 and 198 in 1911. The abandonment of wells in the shallow fields has been under way since 1909 and is gradually growing as the sands are exhausted. Unless new wells from deeper pay sands or the extension of portions of the area are developed this field will probably be completely abandoned by the close of 1913. The deeper field of Crawford county is showing a decline, but its life will be much longer.

NATURAL GAS IN ILLINOIS.

Illinois produces a very small amount of natural gas in proportion to the immense quantities of petroleum. Her rank is eighth among gas producing states with the following preceding her in order: 1, West Virginia; 2, Pennsylvania; 3, Ohio; 4, Kansas; 5, Oklahoma; 6, New York; 7, Indiana. The principal gas areas lie within the oil fields and the supply is used, chiefly, for field operations. Gas is used for domestic purposes in the towns within the oil belt and in several others near the fields. Gas is sold in Lawrenceville, Bridgeport, Pinkstaff, Birds, Flat Rock, Oblong, Palestine, Robinson, New Hebron, Porterville, Stoy, Hutsonville, Annapolis, Casey, Westfield and Martinsville, all being in or near the oil fields. Outside towns, such as Marshall, Vincennes, Indiana, Olney, and Sumner, are connected by direct mains with the fields. The majority of active oil wells produce small amounts of gas, which is collected in gas tanks on each lease. There are, however, several areas within the fields that yield high pressure gas wells, and these serve the commercial demand for the fuel. (See Pl. XXXI.) Such areas lie near Bellair, Hardinville in Honey Creek township, and north of Bridgeport. The gas comes, seemingly, in each case, from raised portions of the oil horizon. The following brief table shows the approximate depths of gas sands and the accompanying pressures:

List of gas-sands in Illinois fields, with depths and gas pressures.

County.	Depth in feet.	Pressure in pounds per square inch.	
		1908.	1910.
Bureau.....	105-330	0-30	0-23
Champaign.....	80-130	.....	15-32
Clark.....	250-550	65-100	35-45
Crawford.....	500-1000	25-400	20-225
Cumberland.....	500-575	15-35	.....
DeWitt.....	94-120	.....	25-50
Edgar.....	265-600	.....	75-127
Lawrence.....	900-1850	500-600	200-750
Lee.....	175-280	.....	18-28
Pike.....	100-893	3-10	4-10

Natural gas was found at a depth of 1,528 feet in Marion county during 1909-1910, at the time the Sandoval field was opened up. The original pressure was about 370 pounds to the square inch. Several wells adjoining the first one developed also produce gas at high pressures and the product of all of them is used for field operations and for domestic use in Sandoval.

A new gas area was tapped early in the year 1910, near Greenville, Bond county. The sand is found between 950 and 1,000 feet and is correlated with the Benoist sand of Sandoval and the Kirkwood sand of Lawrence county. Three wells yielded from 1,250,000 to 2,000,000 cubic feet of gas daily. Several light-pressure gas wells were drilled near Jacksonville, Morgan county, during the year 1910. The yield came from a sand overlying the St. Louis limestone, at a depth of about 300 feet. The gas is odorless, colorless, and burns with a very hot, blue flame.

A gas area similar to the Jacksonville field was tapped in 1908, near Carlinville. Good pressures were secured. A gas, called "drift gas," has been obtained from the Pleistocene deposits over portions of northern-central Illinois and used for the past 25 years. The pressure is usually slight and the lives of the individual wells are short. The depths, from which the gas comes, vary from 50 to 250 feet. Wells of this type have been drilled near Champaign, Princeton, Colchester, Wapella, Heyworth and elsewhere.

The following table records the natural gas development in Illinois from 1906-1910, according to B. Hill:¹

Record of natural gas industry in Illinois, 1906-1910.

Year.	Gas produced.		Gas consumed.			Wells.		
	Number of producers.	Value.	Number of consumers.		Value.	Drilled.		Productive Dec. 31, 1910.
			Domestic.	Industrial.		Gas.	Dry.	
1906.....	66	\$ 87,211	1,429	2	\$ 87,211	.....	.....	200
1907.....	128	143,577	2,126	61	143,577	94	41	283
1908.....	185	446,077	27,377	2204	446,077	121	42	400
1909.....	194	644,401	38,458	2518	644,401	56	11	414
1910.....	207	613,642	210,109	2479	613,642	64	31	435

¹ B. Hill, Natural Gas, Mineral Resources, U. S. for 1910, U. S. Geol. Survey, 1911, p. 317.

² Includes number of consumers and value of gas consumed in Vincennes, Indiana.

The following table prepared by Mr. Hill¹ shows the total estimated value of natural gas in Illinois from 1885 to 1910, inclusive:

Production of natural gas in Illinois, 1885-1910.

Year.	Value.
1885.....	\$ 1,200
1886.....	4,000
1887.....	
1888.....	
1889.....	10,615
1890.....	6,000
1891.....	6,000
1892.....	12,988
1893.....	14,000
1894.....	15,000
1895.....	7,500
1896.....	6,375
1897.....	5,000
1898.....	2,498
1899.....	2,067
1900.....	1,700
1901.....	1,825
1902.....	1,844
1903.....	3,310
1904.....	4,745
1905.....	7,223
1906.....	87,211
1907.....	143,577
1908.....	446,077
1909.....	644,401
1910.....	613,642
Total.....	\$2,048,798

¹ Idem, pp. 300-301.

Record of consumption of natural gas from Illinois, 1908 to 1910.

Year.	Num- ber of pro- ducers having gas wells.	Consumers.		Gas consumed.					
		Domestic.	Indus- trial.	Domestic.			Industrial.		
				Quan- tity M cu. ft.	Cents per M cu. ft.	Value.	Quan- tity M cu. ft.	Cents per M cu. ft.	Value.
1908.....	185	7,377	204	1,050,252	18.5	\$194,859	3,928,027	6.4	\$251,218
1909.....	194	8,458	518	1,270,421	19.5	248,318	7,202,439	5.5	396,083
1910.....	207	10,109	479	1,266,057	21.9	278,377	5,457,229	6.1	335,265
							4,978,879	8.96	\$446,077
							8,472,860	7.61	644,401
							6,723,286	9.13	613,642

APPENDIX—TABLES OF WELL DATA.

INDEX TO TABLES.

	Pages	
	From	To
Crawford county	186	283
Honey Creek township	186	196
Martin township	197	238
Oblong township	239	277
Robinson township	277	283
Lawrence county	283	436
Bridgeport township	283	331
Christy township	331	332
Dennison township	332	364
Lawrence township	364	380
Lukin township		381
Petty township	382	436

Crawford County—Honey Creek Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
2—	N. W.	1 Unknown.	Wesley, No. 1.	528								Dry	No record.
3—	N. E.	1 Shaffer.	Parker, No. 1.	605		962		372	1,128		1,000	Dry	do.
	S. W.	1 Harrington & Co.	Goff, No. 1.	590		790		210	1,290				Dry Salt water, 970 feet.
													Gas, 790 feet, 250 pounds pressure.
	S. E.	1 Shaffer.	Wesley, No. 1.	580		832		252	1,248				Gas, 832 feet, 250 pounds pressure.
						980		400	1,100			Gas	Gas, 980 feet, 400 pounds pressure.
5—	N. W.	2 Murphy.	Maxwell, No. 1.	541		830	80	289	1,211	850	1,000	Gas	Gas, 830 feet.
		1 Riddle.	Mann, No. 14.	464		864	19	400	1,100				
		2 Riddle.	Mann, No. 13.	473		910	19	446	1,054			100	
		3 Red Bank	Allison, No. 1.	477		870	5	397	1,103			100	
		4 Shaffer.	Price, No. 1.	477		919	10	446	1,064			100	
		5 Shaffer.	Price, No. 4.	482		923	35	448	1,052	931	900	Light	Gas, 930 feet.
		6 Shaffer.	Price, No. 2.	472		923	21	446	1,054	970	970	Dry	
		7 Shaffer.	Price, No. 5.	492		915	5	441	1,059	915	950	Dry	Well abandoned.
		8 Shaffer.	Price, No. 3.	486		905	5	419	1,081	1,000	1,000	Dry	No record.
	S. E.	1 Whitehall & Fritz.	Moore, No. 1.	536		928		392	1,108	936	936	Dry	Gas, 932 feet.
		2 Pease.	Smith, No. 1.	511		1,010		499	1,001			Dry	Gas, 932 feet.
6—	N. E.	1 Riddle.	Mann, No. 12.	460		844		384	1,116	850			Gas, 844 feet.
		2 Riddle.	Mann, No. 11.	476		886	17	426	1,074			300	
		3 Red Bank	Allison, No. 2.	478		908	37	448	1,052			Light	
						847	15	371	1,129	847		200	
						877		401	1,099			Dry	
						887	6	409	1,091				

4	Riddle.	Mann, No. 1.	401	do.	Robinson-2	856	121	395	1,105	1,600	Gas sand.
5	Riddle.	Mann, No. 3.	460	Robinson-1.	do.	873	34	434	1,086	*150	Quilt in sand.
6	Riddle.	Mann, No. 4.	459	do.	Robinson-2.	880	23	427	1,073	150	
7	Riddle.	Mann, No. 5.	467	do.	do.	885	20	418	1,082	200	
8	Riddle.	Mann, No. 2.	460	do.	do.	888	36	428	1,072	1,200	
9	Riddle.	Mann, No. 8.	458	do.	do.	892	27	434	1,066	910	Hard lime from 1,400 to 1,663 feet.
10	Riddle.	Mann, No. 17.	458	Stray.	Robinson-2.	1,344	19	886	614	1,663	Hole full of salt water.
11	Treat, Crawford & Treat.	Boyd, No. 6.	477	Robinson-1.	do.	885	51	427	1,073	913	
12	Treat, Crawford & Treat.	Boyd, No. 7.	477	Stray.	Robinson-2.	1,020	5	406	1,094		
13	Treat, Crawford & Treat.	Boyd, No. 3.	481	Robinson-3.	do.	850	373	1,127	908	20	Dry
14	Treat, Crawford & Treat.	Boyd, No. 2.	476	Stray.	Robinson-1.	860	40	409	1,116	35	
15	Treat, Crawford & Treat.	Boyd, No. 1.	477	do.	do.	885	45	408	1,091	100	
16	Ohio.	Kent, No. 2.	471	Stray.	do.	855	45	384	1,116	900	Gas, 860 feet.
17	Ohio.	Kent, No. 4.	471	Robinson-1.	do.	884	23	413	1,087	885	Gas, 885 feet.
18	Ohio.	Kent, No. 1.	484	Robinson-1.	do.	923	23	441	1,059	930	Gas, 930 feet.
19	Ohio.	Kent, No. 3.	480	Robinson-2.	do.	885	20	405	1,095	80	Gas, 888 feet.
20	Ohio.	Kent, No. 5.	478	Stray.	Robinson-2.	822	23	434	1,065	915	
21	Ohio.	Kent, No. 6.	471	Robinson-1.	do.	895	19	417	1,083	897	
22	Ohio.	Kent, No. 7.	470	Stray.	Robinson-1.	859	6	389	1,111	861	Gas, 875 feet.
23	Ohio.	Kent, No. 8.	476	Stray.	Robinson-1.	872	28	402	1,098	875	Gas, 859 feet.
24	Ohio.	Kent, No. 9.	479	do.	Robinson-1.	858	19	382	1,118	865	
25	Riddle.	Mann, No. 18.	456	do.	do.	867	38	388	1,112	869	Gas, 860 feet.
26	Riddle.	Mann, No. 16.	466	do.	Robinson-3.	848	44	382	1,118	855	
27	Riddle.	Mann, No. 19.	454	Robinson-2.	do.	913	16	447	1,053	75	
28	Riddle.	Mann, No. 6.	463	Robinson-1.	do.	853	30	399	1,101	862	
29	Riddle.	Mann, No. 7.	469	do.	do.	832	16	369	1,131	838	No. 2 lens absent.
30	Riddle.	Richart, No. 1.	458	do.	do.	834	19	365	1,135	890	Gas, 841 feet. Well abandoned.
31	Hazelwood.	Richart, No. 2.	460	Robinson-3.	do.	822	22	364	1,136		
32	Hazelwood.	Richart, No. 3.	473	Robinson-2.	do.	887	10	429	1,071	917	Salt water, 952 feet. No upper oil sands.
33	Hazelwood.	Richart, No. 4.	469	Robinson-3.	do.	952	3	492	1,008		
34	Hazelwood.	Richart, No. 5.	470	Robinson-1.	do.	860	11	387	1,113	941	Dry
35	Hazelwood.	Richart, No. 6.	470	Robinson-1.	do.	903	14	430	1,070	873	No. 2 lens absent.
36	Hazelwood.	Richart, No. 7.	469	Robinson-3.	do.	827	17	357	1,143		
37	Hazelwood.	Richart, No. 8.	469	Robinson-3.	do.	827	16	353	1,147		
38	Hazelwood.	Richart, No. 9.	469	Robinson-3.	do.	890	10	421	1,079		Dry

* Barrels per hour.

Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Altitude below sea level—feet.	Altitude above datum plane—feet.	Total depth—feet.	Oil depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.						
6— N. W.	11 Ohio.		G. Kersey, No. 1.	464	Robinson-1	814	26	350	1,150	820			50	Gas, 814 feet.
	12 Ohio.		G. Kersey, No. 2.	462	Robinson-2	855	11	421	1,079	890			25	Gas, 855 feet.
	13 Riddle.		Mann, No. 20.	470	Robinson-1	885	15	393	1,107	890				
	14 Riddle.		Mann, No. 15.	477	Robinson-2	835	6	423	1,077	890				
	15 Riddle.		Mann, No. 10.	488	Robinson-1	835	30	365	1,135					
	16 Riddle.		Mann, No. 9.	496	Robinson-2	885	30	415	1,085					
	1 Ohio.		Frost, No. 1.	484	Robinson-1	831	32	374	1,126				500	Show
	2 Devonian.		Frost, No. 1.	481	Robinson-3	918	28	441	1,063					
	3 Devonian.		Frost, No. 4.	497	Robinson-1	864	19	376	1,124	869				
	4 Devonian.		Frost, No. 2.	487	Robinson-2	925	15	437	1,063					
	5 Devonian.		Frost, No. 3.	492	Robinson-1	866	10	370	1,130				40	Salt water.
	1 Treat, Crawford & Treat.		Boyd, No. 8.	483	Robinson-3	1,203	28	719	781	1,203				
	2 Treat, Crawford & Treat.		Boyd, No. 9.	494	Robinson-1	845	5	364	1,136					
	3 Treat, Crawford & Treat.		Boyd, No. 5.	481	Robinson-2	945	22	464	1,036	951				
	4 Treat, Crawford & Treat.		Boyd, No. 4.	481	Robinson-1	845	46	348	1,152					
S. E.	5 Ohio.		Boyd, No. 1.	481	Robinson-2	934	12	437	1,063	982				
	6 Ohio.		Boyd, Hrs. No. 2.	488	Robinson-1	859	12	372	1,128					
	7 Ohio.		Boyd, Hrs. No. 3.	482	Robinson-2	876	43	389	1,111	929				
					Robinson-1	857	7	365	1,135					
					Robinson-2	869	148	377	1,123	1,017				
					Robinson-1	863	40	380	1,120	870				
					Robinson-1	864	46	370	1,130	914				
					do.	855	55	374	1,126	864				
					do.	845		364	1,136					
					do.	920		439	1,061					
					Robinson-1	860	15	372	1,128	862				
					Robinson-2	887	13	403	1,093	887				

7— N. W.	1 Boles, Slattery & Dunn.	482 {	Shallow— Robinson-2.	726 930 1,070	10 15	244 521	1,256 970 1,075	Slow Show Dry	Considered a dry well. Salt water, 1,075 feet.
8— N. E.	2 Ohio.	546	Stray	923	18	352	1,148	Dry	No record.
N. W.	1 Shaffer	553	do.	950	15	379	1,121	Gas	Gas, 960 feet.
S. W.	1 Ohio	571	Robinson-2.	971	9	450	1,050	2	Gas, 988 feet. Salt water, 1,054 feet.—Well abandoned.
	521 {	Robinson-3.	988	6	467	1,033	988		
9— S. W.	1 Leeper Bros.	475	do.	965	14	490	1,010	Dry	Salt water, 970 feet.
10— S. E.	1 Caldwell, et al.	480	Robinson-2.	952	14	472	1,028	Dry	Salt water, 962 feet.
N. E.	1 Craig & Lowrie	580 {	do.	1,058	7	478	1,022	Dry	
S. W.	1 Shaffer	571	Robinson-3	1,078	7	498	1,002		
	2 Shaffer	562	Robinson-1	1,007	24	429	1,071		
	3 Shaffer	567	do.	997	29	435	1,065		
	4 Shaffer	572	do.	1,000	19	433	1,067		Quit in sand.
	5 Shaffer	584	do.	1,008	30	428	1,072		Quit in sand.
	6 Shaffer	585	do.	1,000	22	424	1,076		do.
	7 Linden	589	do.	1,000	108	401	1,055	30	
	1 Linden	580	do.	1,007	20	427	1,073	150	
	2 Linden	585	do.	1,003	35	418	1,082	150	
	3 Linden	574	do.	983	35	409	1,091	150	
	4 Linden	576	do.	996	31	420	1,089	300	
	5 Linden	570	do.	997	31	427	1,073		
	6 Linden	579	do.	997	35	418	1,082		
	7 Linden	580	Robinson-2	1,031	21	451	1,049		75 Salt water, 1,047 feet.
	8 Linden	590	Robinson-1	995	36	405	1,055	125	
	9 Linden	595	do.	991	20	396	1,104		
	10 Craig & Lowrie	575	do.	937	60	362	1,138		
	11 Craig & Lowrie	553	Robinson-2	1,010	21	457	1,043		Quit in sand.
	12 Craig & Lowrie	561	do.	981	44	419	1,081		do.
	13 Craig & Lowrie	572	Robinson-1	988	37	416	1,084		do.
	14 Craig & Lowrie	572	do.	952	78	380	1,120		do.
15— N. E.	15 Craig & Lowrie	565	Robinson.					Dry	No sand record.
	1 Shaffer	553	Robinson-1	983	35	430	1,070		Salt water, 1,000 feet.
	2 Shaffer	571	do.	991	32	420	1,080		
	3 Shaffer	585	H. Parker, No. 8.	991	26	406	1,091		
	4 Craig & Lowrie	579	do.	984	34	405	1,095		Quit in sand.
	5 Craig & Lowrie	580	R. Weger, No. 5.	980	47	400	1,100		do.
	6 Craig & Lowrie	583	do.	1,014	19	431	1,069		do.
	7 Craig & Lowrie	596	do.	1,014	17	417	1,083		do.
	8 Craig & Lowrie	597	R. Weger, No. 9.	1,013	17	423	1,077		do.
	9 Craig & Lowrie	567	do.	990	37	420	1,090		do.
	10 Craig & Lowrie	575	R. Weger, No. 3.	985	49	411	1,077		do.
	11 Craig & Lowrie	573	do.	998	35	425	1,075		do.
	12 Craig & Lowrie	554	R. Weger, No. 10.					Dry	No record.

9 Ohio.....	Sequist, No. 3.....	558	Robinson-1.....	989	23	431	1,069	.....	Salt water.
10 Ohio.....	Sequist, No. 4.....	544	do.....	960	44	416	1,084	.....	.....
11 Ohio.....	Sequist, No. 5.....	573	do.....	996	28	423	1,077	.....	.....
12 Red Bank.....	Johnson, No. 8.....	552	do.....	958	8	406	1,094	.....	50
13 Red Bank.....	Johnson, No. 7.....	525	do.....	955	.....	430	1,070	.....	100
14 Red Bank.....	Johnson, No. 9.....	540	Robinson-2.....	988	.....	463	1,037	.....	Quit in sand
15 Red Bank.....	Johnson, No. 1.....	538	Sequist.....	915	20	436	1,064	.....	50
16 Red Bank.....	Johnson, No. 5.....	548	Robinson-1.....	961	15	423	1,077	964	Gas, 95 feet.
17 Red Bank.....	Johnson, No. 2.....	537	do.....	985	32	437	1,063	990	200
18 Red Bank.....	Johnson, No. 4.....	561	Robinson-2.....	988	.....	421	1,079	967	50
19 Red Bank.....	Johnson, No. 3.....	556	do.....	1,007	13	470	1,030	.....	50
20 Shafter.....	Ford, No. 1.....	538	Robinson-1.....	980	30	419	1,081	984	100
21 Shafter.....	Ford, No. 2.....	543	do.....	932	48	396	1,101	.....	Quit in sand.
22 Shafter.....	Ford, No. 3.....	537	do.....	967	49	424	1,076	.....	Quit in sand.
23 Shafter.....	Ford, No. 4.....	562	do.....	960	38	434	1,066	960	998
24 Shafter.....	Ford, No. 5.....	577	Robinson-2.....	995	17	458	1,042	995	960
25 Shafter.....	Vinsel, No. 4.....	572	Robinson-1.....	998	29	426	1,074	96	96
26 Shafter.....	Vinsel, No. 1.....	571	do.....	1,001	30	424	1,076	1,001	Quit in sand.
27 Shafter.....	Vinsel, No. 2.....	571	do.....	990	42	418	1,082	1,015	1,032
28 Shafter.....	Vinsel, No. 6.....	578	do.....	1,000	29	429	1,071	1,000	Quit in sand.
29 Shafter.....	Vinsel, No. 12.....	583	do.....	1,009	23	431	1,069	1,009	Quit in sand.
30 Shafter.....	Vinsel, No. 11.....	588	do.....	985	28	402	1,098	990	Quit in sand.
1 Shafter.....	Vinsel, No. 2.....	581	do.....	985	34	397	1,103	985	Quit in sand.
2 Shafter.....	Vinsel, No. 1.....	583	do.....	1,015	19	434	1,066	1,019	Quit in sand.
3 Shafter.....	Mail, No. 1.....	557	do.....	1,006	35	423	1,077	1,014	Quit in sand.
4 Shafter.....	H. Parker, No. 7.....	586	do.....	995	18	438	1,062	995	Quit in sand.
5 Shafter.....	H. Parker, No. 20.....	574	do.....	1,006	32	420	1,080	1,006	Quit in sand.
6 Shafter.....	H. Parker, No. 19.....	551	do.....	984	22	470	1,070	984	Quit in sand.
7 Shafter.....	H. Parker, No. 18.....	565	do.....	993	22	419	1,058	993	Quit in sand.
8 Shafter.....	H. Parker, No. 17.....	561	do.....	990	21	415	1,083	995	Quit in sand.
1 Ohio.....	Darone, No. 2.....	533	do.....	990	16	427	1,073	960	15 Salt water 976 feet.
2 Ohio.....	Darone, No. 1.....	540	do.....	973	13	433	1,067	973	150 Salt water, 986 feet.
3 Ohio.....	J. Weger, No. 1.....	493	do.....	951	.....	458	1,042	.....	Dry
4 Ohio.....	Ford, No. 1.....	475	Robinson-3.....	994	.....	515	985	.....	Dry
5 Ohio.....	J. Weger, No. 7.....	554	Robinson-1.....	994	25	440	1,060	994	Salt water, 1,028 feet.
6 Ohio.....	J. Weger, No. 6.....	531	do.....	969	25	438	1,066	969	Salt water, 1,021 feet.
7 Ohio.....	J. Weger, No. 5.....	532	do.....	966	21	434	1,066	966	Quit in sand.
8 Ohio.....	J. Goff, No. 2.....	512	do.....	940	22	428	1,072	.....	Quit in sand.
9 Ohio.....	J. Goff, No. 1.....	496	Robinson-2.....	960	.....	464	1,036	965	2 Salt water, 962 feet. Well abandoned.
10 Ohio.....	J. Weger, No. 4.....	517	do.....	969	20	452	1,048	969	Well abandoned.
11 Ohio.....	J. Weger, No. 3.....	532	Robinson-1.....	980	28	448	1,052	980	Well abandoned.
12 Ohio.....	Weger, No. 1.....	538	do.....	991	40	439	1,061	991	Well abandoned.
13 Ohio.....	G. Parker, No. 1.....	552	do.....	999	.....	447	1,053	1,002	100
14 Ohio.....	G. Parker, No. 5.....	544	do.....	985	23	441	1,059	990	50 Salt water, 1,008 feet.
15 Ohio.....	G. Parker, No. 4.....	528	do.....	978	5	445	1,055	973	40 Salt water, 995 feet.
16 Ohio.....	G. Parker, No. 2.....	548	do.....	987	36	439	1,061	1,006	100

S. E.

16--

N. E.

S. W.

S. E.

Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Name.				Sand.			Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
									Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
16—	S. E...														
		13 Ohio	G. Parker, No. 3	538	Robinson-2	1,001	27	463	1,037	1,001				40	Salt water, 1,028 feet
		14 Ohio	G. Parker, No. 6	530	do	998	5	458	1,042	998				10	Salt water, 1,003 feet
		15 Ohio	A. Goff, No. 3	516	do	961	23	445	1,055	965				40	Salt water, 984 feet
		16 Ohio	A. Goff, No. 1	516	do	966	29	450	1,050	966				50	Salt, water 995 feet
		17 Ohio	A. Goff, No. 2	490	Robinson-1	931		441	1,059	931				30	Salt water, 965 feet
17—	N. E...	1 Red Bank	Jewel, No. 1	466	Robinson-3	958		492	1,008					Dry	Salt water, 975 feet
18—	N. W...	1 Ohio	Baker, No. 1	467		1,080	9	613	887					Dry	Salt water, 1,080 feet
		2 Ohio	Mann, No. 1	435									1,420	Dry	No sands.
19 (N)—	S. W...	1 Red Bank	Maxwell, No. 1	475	Stray	800	10	325	1,175					Gas	T. 6 N., R. 12 W.
		2 Red Bank	Garrard, No. 2	487	do	830	15	355	1,145	830				10	Gas well.
		1 Red Bank	Garrard, No. 1	480	Robinson-1	860	51	373	1,127					Gas	1,000,000 cu. feet gas daily
					Robinson-3	951	20	471	1,029					Gas	2,000,000 cubic feet gas daily
20 (S)—	N. E...	1 Ohio	Stephenson, No. 1	438	Robinson-2	891	82	453	1,047				973	Dry	Salt water, 943 feet. T. 5 N., R. 12 W.
		1 Ohio	Darnold, No. 1	455		1,028		573	927				1,035	Dry	Salt water, 1,028 feet
20 (N)—	N. W...	1 Ohio	Eagleton, No. 1	506	Stray	890	8	384	1,116					Gas	Gas, 892 feet
		2 Ohio	P. Frost, No. 1	497	do	925	20	428	1,072					Gas	T. 6 N., R. 12 W.
		1 Ohio	Rodrick, No. 1	480	Robinson-3	975		478	1,022					Gas	Gas, 976 feet
					Robinson-3	952	18	472	1,028				1,227	Dry	Salt water, 970 feet
21—	N. E...	1 Ohio	G. Parker, No. 6	534	Robinson-1	982		448	1,052	987			1,002	25	Salt water, 1,002 feet. T. 5 N., R. 12 W.
22—	N. E...	1 Ohio	Mann, No. 1	572									1,102	Dry	No sands. Salt water, 1,065 feet
		1 Murphy	T. Parker, No. 3	544	Robinson-1	986		442	1,058				998	Dry	Salt water, 998 feet

28— N. E..	2 Murphy.....	T. Parker, No. 2.....	527	Robinson-1.....	975	20	431	1,062	980	905	Light Salt water, 994 feet.
29— N. W..	3 Murphy.....	T. Parker, No. 1.....	528	Robinson-2.....	990	26	437	1,033	960	1,003	Dry Salt water, 1,000 feet.
	4 Red Bank.....	Johnson, No. 6.....	526	Robinson-1.....	955		429	1,071			200
	1 Unknown.....	Watt, No. 1.....	560								Dry No record
	1 Red Bank.....	J. Frost, No. 1.....	467	Stray.....	893	18	426	1,074			1,000,000 cubic feet gas daily.
	2 Crescent.....	M. Frost, No. 1.....	461	Robinson-3.....	950	16	433	1,017			Gas Salt water, 966 feet.
S. W...	1 Ohio.....	Davis, No. 2.....	465	Stray.....	898	15	437	1,063			Gas
	2 Ohio.....	Davis, No. 1.....	495	Robinson-2.....	921	15	460	1,040		921	Gas well.
S. E...	1 Shaffer.....	Reinoehl, No. 3.....	495	Robinson-2.....	1,030	10	450	1,050			Gas
	2 Shaffer.....	Reinoehl, No. 2.....	518	Robinson-2.....	921	12	436	1,074	924		Salt water, 1,030 feet.
	3 Shaffer.....	Reinoehl, No. 1.....	529		942		427	1,053			Gas Gas well.
							441				Gas Gas, 942 feet, 185 pounds, minute pressure.
30— N. E..	1 Ohio.....	A. Frost, No. 1.....	482	Robinson-1.....	921	24	403	1,097			Gas Gas, 921 feet.
	2 Crescent.....	M. Frost, No. 1.....	480	Robinson-2.....	921	110	392	1,108			Gas Gas, 921 feet, 425 pounds pressure.
N. W..	1 Ohio.....	Purcell, No. 1.....	465	Robinson-3.....	1,010	6	528	972			Dry Salt water, 1,010 feet.
	2 Associated Producers.....	Van Winkle, No. 1.....	460	Robinson-2.....	873	29	393	1,107	878		
	3 Associated Producers.....	Van Winkle, No. 2.....	482	Robinson-2.....	920	11	440	1,060		938	
30— S. E...	1 Red Bank.....	Sears, No. 1.....	486	Robinson-1.....	870	8	384	1,116			500,000 cubic feet gas daily Well abandoned.
				Robinson-2.....	933		447	1,053			
31— N. E..	1 Ohio.....	Clark, No. 6.....	466	Robinson-2.....	905		439	1,061	923		8 Gas, 910 feet.
	2 Red Bank.....	Miller, No. 2.....	457	Robinson-1.....	849	12	392	1,108		40	
	3 Red Bank.....	Miller, No. 1.....	458	Robinson-1.....	875	35	418	1,082			
N. W..	1 Red Bank.....	Miller, No. 3.....	475	Robinson-1.....	866		408	1,092	875		
	2 Ohio.....	Doucommon, No. 2.....	474	Robinson-3.....	835		360	1,140			
S. W...	1 Ohio.....	Kennedy, No. 1.....	453	Robinson-3.....	855	75	380	1,120			
	2 Ohio.....	Kennedy, No. 5.....	455	Robinson-4.....	950		475	1,025		50	
	3 Ohio.....	Kennedy, No. 3.....	455	Robinson-1.....	921		447	1,053		5	
	4 Ohio.....	Kennedy, No. 4.....	463	Robinson-1.....	910		457	1,043	915		30 Gas, 915 feet. Salt water 936 feet.
	5 Ohio.....	Kennedy, No. 2.....	450	Robinson-2.....	938		483	1,017	942		15 Gas, 938 feet. Salt water 951 feet.
	6 Treat, Crawford & Treat.....	Purcell, No. 4.....	465	Robinson-3.....	829	33	374	1,126	835		80 Gas, 830 feet.
				Robinson-1.....	826	33	373	1,127	860		30 Gas, 841 feet.
				Robinson-2.....	820	20	370	1,130			
				Robinson-1.....	855	13	405	1,065	855		20 Gas, 855 feet.
				Robinson-1.....	840		375	1,125			
				Robinson-3.....	924	19	459	1,041	924		10

Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-e-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
31— S. W. ...	7	Treat, Crawford & Treat.	Purell No. 2.	457	816	.....	359	1,141	.....	.....	10 Gas well.	.....
	8	Treat, Crawford & Treat.	Purell, No. 1.	455	863	.....	406	1,094	.....	.....	Gas	.....
	9	Treat, Crawford & Treat.	Purell, No. 3.	470	900	.....	445	1,055	925	.....	10 Well abandoned.	.....
	10	Leeper Bros.	Sparks, No. 7.	455	853	22	394	1,106	953	.....	10	.....
	11	Leeper Bros.	Sparks, No. 11.	460	817	27	362	1,138	825	.....	.....	.....
	12	Leeper Bros.	Sparks, No. 3.	456	849	11	394	1,106	.....	892	.....	.....
	13	Leeper Bros.	Sparks, No. 1.	456	819	15	359	1,141	.....	.....	.....	.....
	14	Leeper Bros.	Sparks, No. 2.	456	828	.....	366	1,134	.....	.....	.....	.....
	15	Ohio.	Reinochl, No. 3.	460	842	.....	372	1,128	833	.....	Gas.	.....
	16	Ohio.	Reinochl, No. 4.	454	865	5	409	1,091	.....	933	.....	.....
	17	Ohio.	Reinochl, No. 5.	453	823	12	367	1,133	.....	933	Dry Salt water, 933 feet.	.....
	18	Ohio.	Reinochl, No. 2.	455	837	18	377	1,123	.....	.....	35 Salt water, 945 feet.	.....
	19	Ohio.	Reinochl, No. 1.	457	888	14	428	1,072	.....	.....	15	.....
	20	Ohio.	Reinochl, No. 7.	456	860	5	406	1,094	967	.....	60 Gas, 838 feet.	.....
S. E. ...	21	Ohio.	Reinochl, No. 6.	452	967	14	513	987	.....	838	25 Salt water, 975 feet.	.....
	1	Ohio.	Clark, No. 4.	459	941	.....	486	1,014	954	.....	56 Gas, 935 feet, salt water, 968 feet.	.....
	2	Ohio.	Clark, No. 5.	458	930	40	473	1,027	940	.....	No record.	.....
	3	Ohio.	Clark, No. 3.	466	945	22	493	1,007	948	.....	4 Gas, 945 feet; salt water, 967 feet.	.....
	4	Ohio.	Clark, No. 1.	471	908	24	449	1,051	920	.....	25 Gas, 908 feet.	.....
	5	Ohio.	Clark, No. 2.	468	900	31	442	1,058	910	.....	15 Gas, 900 feet.	.....
	6	Ohio.	Clark, No. 7.	469	919	36	453	1,047	928	.....	60 Gas, 924 feet.	.....
					890	22	419	1,081	.....	.....	Gas, 895 feet.	.....
					943	24	472	1,028	951	.....	45	.....
					947	12	479	1,021	963	.....	15 Gas, 944 feet. Salt water, 975 feet.	.....

32— N. E...	7 Ohio	Highsmith, No. 4	462	{ Robinson-2	905	12	443	1,057	50	Salt water, 975 feet.
	8 Ohio	Highsmith, No. 1	468	{ Robinson-3	932	11	470	1,030	Dry	No sands.
	9 Ohio	Highsmith, No. 2	462	{ Robinson-2	905	5	437	1,063	Dry	Salt water, 992 feet.
	10 Ohio	Highsmith, No. 5	458	{ Robinson-4	990		532	968	Dry	Gas, 873 feet.
	11 Ohio	Highsmith, No. 6	457	{ Robinson-1	873	17	416	1,084	5	
	12 Ohio	Highsmith, No. 3	457	{ Robinson-3	919	12	462	1,038	20	
	13 Red Bank	Highsmith, No. 1	457	{ Robinson-1	874	40	417	1,083	80	
	14 Red Bank	Highsmith, No. 2	457	{ do	870	43	413	1,087	25	
	15 Morrison	Highsmith, No. 1	465	{ Robinson-2	874		417	1,083		
	16 Morrison	Highsmith, No. 2	470	{ Robinson-3	940	34	483	1,017		Rapid decline of well.
	17 Morrison	Highsmith, No. 4	457	{ Robinson-2	890		425	1,075		Abandoned
	18 Red Bank	Highsmith, No. 5	456	{ Robinson-3	958	26	493	1,007	80	Low gravity oil.
	19 Red Bank	Highsmith, No. 4	456	{ Robinson-3	904		434	1,066		Well abandoned.
	20 Red Bank	Highsmith, No. 6	455	{ Stray	844	20	488	1,012		Gas, 844 feet.
N. W.. S W...	21 Morrison	Highsmith, No. 3	456	{ Robinson-2	899	43	442	1,058	80	Well abandoned.
	22 Red Bank	Highsmith, No. 3	457	{ Robinson-2	830	39	424	1,076	20	
	1 Treat, Crawford & Treat.	Highsmith, No. 1	531	{ Robinson-2	888	39	432	1,068	25	
	2 Ohio	Richey, No. 5	498	{ Robinson-1	827	49	372	1,128	25	
	3 Ohio	Richey, No. 3	528	{ Stray	873		418	1,082		
	4 Ohio	Richey, No. 1	525	{ Robinson-1	830	38	374	1,126	80	Gas, 832 feet.
	5 Ohio	Richey, No. 4	509	{ Robinson-2	900		444	1,056		Well abandoned because of rapid decline.
	6 Ohio	Richey, No. 2	482	{ Robinson-1	848		391	1,109		
	1 Red Bank	McCarte, No. 1	495	{ Robinson-2	892	30	435	1,065	25	
	2 Ohio	Bartlet, No. 1	486	{ Stray	855		324	1,176	Show	Gas, 325 pounds pressure.
	1 Ohio	Crum, No. 1	481	{ Robinson-3	935	17	404	1,096	Dry	No record.
	2 Ohio	Crum, No. 4	480	{ Robinson-1	958	7	433	1,067	Dry	No record.
	3 Ohio	Crum, No. 7	476	{ Robinson-2	988	7	463	1,037	1,060	
	4 Ohio	Crum, No. 3	458	{ Robinson-3	925		416	1,084	Light	Gas, 954 feet.
	5 Ohio	Crum, No. 5	464	{ Robinson-3	960		478	1,022	Light	Salt water, 1058 feet.
S. E...	6 Ohio	Crum, No. 2	469	{ Robinson-3	920		425	1,075	Gas	Gas, 925 feet.
	7 Ohio	Crum, No. 6	465	{ Robinson-3	937	16	451	1,049	60	
	8 Red Bank	Slier, No. 1	466	{ Robinson-3	924		443	1,057	Gas, 954 feet.	Well abandoned.
	9 Red Bank	Slier, No. 2	467	{ Robinson-3	944	14	464	1,036	8	Gas, 944 feet.
	10 Red Bank	Slier, No. 3	485	{ Robinson-3	940	25	464	1,036	2	Gas, 940 feet.
	1 Red Bank	Highsmith, No. 1	479	{ Robinson-2	905		446	1,054	45	Gas, 913 feet.
	2 Wilcox & Schuler	Highsmith, No. 3	504	{ Robinson-4	960	5	496	1,004	4	Gas, 960 feet.
				{ Robinson-3	975	14	511	989	25	Salt water, 991 feet.
				{ Robinson-3	942	21	473	1,027	10	Gas, 930 feet.
				{ Robinson-2	937	19	472	1,028	10	Gas, 937 feet.
				{ Robinson-2	913	32	447	1,053	20	
				{ Robinson-3						No record.
				{ Robinson-3	961		482	1,018		No record.
				{ Robinson-3						Salt water, 1,040 feet.
				{ Robinson-3						Dry No record.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. E...	1	Hazelwood.....	A. Pope, No. 17.....	470	Robinson-1	824	14	354	1,146	.....	.....	.....	.....
	2	Hazelwood.....	A. Pope, No. 15.....	471	Robinson-2	847	11	377	1,123	.....	890	.....	.....
	3	Hazelwood.....	A. Pope, No. 11.....	469	Robinson-2	816	22	345	1,155	.....	.....	.....	.....
	4	Hazelwood.....	A. Pope, No. 13.....	471	Robinson-1	823	16	351	1,119	.....	888	.....	.....
	5	Hazelwood.....	A. Pope, No. 12.....	465	Robinson-2	816	18	345	1,155	.....	.....	.....	.....
	6	Hazelwood.....	A. Pope, No. 10.....	465	Robinson-1	857	12	386	1,114	.....	884	.....	.....
	7	Hazelwood.....	A. Pope, No. 14.....	464	Robinson-2	813	23	348	1,152	.....	885	.....	.....
	8	Hazelwood.....	A. Pope, No. 9.....	465	Robinson-1	850	15	385	1,115	.....	.....	.....	.....
	9	Hazelwood.....	A. Pope, No. 8.....	460	Robinson-2	808	12	343	1,157	.....	.....	.....	.....
	10	Hazelwood.....	A. Pope, No. 7.....	464	Robinson-1	824	16	359	1,141	.....	.....	.....	.....
	11	Hazelwood.....	A. Pope, No. 4.....	455	Robinson-2	850	12	385	1,115	.....	869	.....	.....
	12	Hazelwood.....	A. Pope, No. 5.....	458	Robinson-1	820	25	356	1,144	.....	.....	.....	.....
	13	Ohio.....	M. Kersey, No. 1.....	456	Robinson-2	851	8	387	1,113	.....	876	.....	.....
	14	Ohio.....	M. Kersey, No. 3.....	452	Robinson-1	804	23	339	1,161	.....	876	.....	.....
	15	Ohio.....	M. Kersey, No. 2.....	464	Robinson-2	798	26	338	1,162	.....	841	.....	.....
	16	Ohio.....	M. Kersey, No. 5.....	465	Robinson-1	797	24	333	1,167	.....	848	.....	.....
	17	Ohio.....	M. Kersey, No. 7.....	463	Robinson-2	780	18	325	1,175	.....	848	.....	.....
	18	Ohio.....	M. Kersey, No. 4.....	457	Robinson-1	853	5	398	1,102	.....	871	.....	.....
	19	Ohio.....	A. Kersey, No. 1.....	463	Robinson-2	781	37	323	1,177	.....	871	.....	.....
					Robinson-1	821	7	363	1,137	.....	835	.....	.....
					Robinson-2	802	7	346	1,154	.....	808	.....	.....
					Robinson-1	818	22	348	1,152	.....	803	.....	.....
					Robinson-2	800	22	366	1,134	.....	20	.....	.....
					Robinson-3	836	28	404	1,096	.....	.....	.....	.....
					Robinson-1	808	34	344	1,156	.....	813	.....	.....
					Robinson-2	806	36	341	1,159	.....	810	.....	.....
					Robinson-3	828	36	365	1,135	.....	80 Gas, 810 feet 50 Gas, 806 feet	.....	.....
					Robinson-1	894	43	431	1,069	.....	.....	.....	.....
					Robinson-2	798	14	341	1,159	.....	800	.....	.....
					Robinson-3	815	10	352	1,148	.....	125 Gas, 815 feet	.....	.....
					Robinson-1	858	8	395	1,105	.....	.....	.....	.....

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. E...	20	Ohio.....	A. Kersey, No. 3.....	465	{ Robinson-1.....	818	22	353	1,147	820	.....	400	Gas, 818 feet.....
					{ Robinson-2.....	850	28	385	1,115	.....	400	Gas, 832 feet.....	
	21	Ohio.....	E. Kersey, No. 2.....	466	{ Robinson-1.....	870	14	364	1,136	835	.....	
	22	Ohio.....	E. Kersey, No. 3.....	467	{ Robinson-2.....	850	20	384	1,116	860	.....	
	23	Ohio.....	E. Kersey, No. 1.....	464	{ Stray.....	800	7	333	1,167	828	.....	
					{ Robinson-2.....	896		362	1,138	.....			Gas, 826 feet.....
	24	Ohio.....	A. Kersey, No. 4.....	465	{ Robinson-3.....	883	13	424	1,076	890	.....	300	Best production, 850 feet.....
					{ Robinson-2.....	823	34	363	1,137	850	.....	
					{ Robinson-3.....	894	8	429	1,071	895	.....	50	Gas, 806 feet.....
	25	Ohio.....	A. Kersey, No. 2.....	461	{ Robinson-1.....	806	8	345	1,155	812	.....	5	Best production, 885 feet.....
N. W..	26	Ohio.....	J. Hudson, No. 1.....	473	{ Robinson-2.....	881	19	420	1,080	885	.....	5	Gas, 800 feet.....
					{ Robinson-3.....	800	30	327	1,173	820	.....		Salt water, 898 feet.....
					{ Robinson-3.....	895	3	422	1,078	.....			Well abandoned.....
	27	Ohio.....	M. Kersey, No. 6.....	466	{ Stray.....	785	5	319	1,181	.....	85	Gas, 785 feet.....	
					{ Robinson-3.....	890	10	424	1,076	890	.....	25	Salt water, 923 feet.....
	28	Hazelwood.....	Wilson, No. 2.....	450	{ Robinson-1.....	785	23	335	1,165	.....	.....
					{ Robinson-2.....	921	11	371	1,129	849	.....	
	29	Hazelwood.....	Wilson, No. 4.....	451	{ Stray.....	772	5	321	1,179	.....	.....
					{ Robinson-1.....	800	18	349	1,151	.....	.....
					{ Robinson-2.....	840	58	389	1,111	878	900	.....	Gas, 840 feet. Salt water, 900 feet.....
N. W..	30	Hazelwood.....	Wilson, No. 3.....	445	{ Robinson-1.....	782	33	337	1,163	825	.....	
	31	Hazelwood.....	Wilson, No. 5.....	455	{ Stray.....	782	18	327	1,173	785	.....	
	1	Red Bank.....	F. Frost, No. 1.....	442	{ Robinson-3.....	858	36	403	1,097	860	894	100	
	2	Red Bank.....	F. Frost, No. 4.....	442	{ Robinson-1.....	783	23	341	1,159	.....	.....	150	
					{ do.....	767		325	1,175	770	.....	
	3	Ohio.....	F. Frost, No. 2.....	443	{ do.....	775	12	332	1,168	.....	.....		Slate, 787 to 789 feet.....
					{ Stray.....	789	9	346	1,154	862	.....		No second lens.....
					{ Robinson-1.....	795		350	1,150	.....	.....
	4	Ohio.....	F. Frost, No. 1.....	445	{ Robinson-3.....	887	.....	442	1,058	.....	.....	Dry	

5	Hazelwood.	Wilson, No. 1.	437	{ Stray	744	291	307	1,133	Gas. Well abandoned.
6	Red Bank.	F. Frost, No. 2.	441	{ Robinson-1	803	32	366	1,134	100
7	Red Bank.	F. Frost, No. 3.	440	{ do.	773	22	332	1,168	785
8	Ohio.	L. Smith, No. 1.	442	{ Robinson-3	766	18	326	1,174	40
9	Ohio.	A. Mann, Acct. 2, No. 1.	443	{ do.	875	15	435	1,065	30 Gas, 865 feet. Salt water, 880 feet.
10	Ohio.	A. Mann, Acct. 2, No. 5.	443	{ do.	866	19	423	1,077	871
11	Ohio.	A. Mann, Acct. 2, No. 2.	443	{ do.	861	149	418	1,082	40 Gas, 866 feet. Salt water, 885 feet.
12	Ohio.	A. Mann, Acct. 2, No. 3.	442	{ do.	864		426	1,074	Dry Salt water, 1,000 feet.
13	Ohio.	A. Mann, Acct. 2, No. 4.	437	{ do.	856		414	1,086	3 Gas, 864 feet. Salt water, 871 feet.
1	Ohio, Crawford & Treat.	A. Mann, Acct. 2, No. 6.	437	{ Robinson-2	845	20	408	1,092	Gas Gas, 848 ft., 3,000,000 cu. ft.
2	Treat, Crawford & Treat.	Due, No. 1.	434	{ Robinson-3	906	15	472	1,028	4 Gas, 827 feet.
3	Fertig Bros.	Parker, No. 3.	436	{ Robinson-1	794	10	358	1,142	2
4	Fertig Bros.	Parker, No. 2.	465	{ Robinson-3	890	10	444	1,056	Gas, 880 feet.
5	Fertig Bros.	Parker No. 1.	460	{ Robinson-2	858	5	398	1,102	No record.
6	Leeper Bros.	Haskins, No. 1.	439	{ Robinson-3	889	429	413	1,071	Quit in sand.
7	Leeper Bros.	Haskins, No. 4.	446	{ Stray	752	81	313	1,187	Salt water, 892 feet.
1	Leeper Bros.	Haskins, No. 8.	454	{ do.	845	49	399	1,101	Salt water, 894 feet.
2	Leeper Bros.	Haskins, No. 7.	455	{ Robinson-1	815	68	361	1,139	Gas, 817 feet and 865 feet.
3	Leeper Bros.	Haskins, No. 6.	448	{ Robinson-2	860	56	405	1,095	Gas, 865 feet. Salt water, 916 feet.
4	Leeper Bros.	Haskins, No. 5.	457	{ Robinson-3	875	37	427	1,073	Quit in sand.
5	Leeper Bros.	Haskins, No. 3.	450	{ Robinson-1	868	48	411	1,089	Gas Gas, 886 feet and 892 feet.
6	Leeper Bros.	Haskins, No. 2.	446	{ Robinson-3	830	18	380	1,120	916
7	W. L. Curtis.	Mulvane, No. 2.	460	{ Robinson-2	889	20	439	1,061	Gas
8	W. L. Curtis.	Mulvane, No. 3.	462	{ Robinson-1	860	37	414	1,086	Quit in sand.
9	W. L. Curtis.	Mulvane, No. 4.	464	{ Robinson-3	831	18	371	1,129	Gas, 895 feet.
10	W. L. Curtis.	Mulvane, No. 1.	461	{ Robinson-2	895	22	435	1,065	Stray
11	Leeper Bros.	O. E. & J. C. Eagleton, No. 4.	457	{ Robinson-3	890	35	428	1,072	Gas, 892 feet.
12	Leeper Bros.	O. E. & J. C. Eagleton, No. 1.	458	{ Robinson-1	830	2	366	1,134	No record.
13	Leeper Bros.	O. E. & J. C. Eagleton, No. 2.	454	{ Robinson-3	890	29	426	1,074	Quit in sand.
14	Leeper Bros.	O. E. & J. C. Eagleton, No. 3.	451	{ Robinson-2	880	29	423	1,077	Gas, 897 feet. Salt water, 921 feet.
15	Ohio.	C. Eagleton, No. 1.	455	{ Shallow	857		399	1,101	100
16	Ohio.	C. Eagleton, No. 5.	461	{ Shallow	678	23	224	1,276	25 Salt water, 694 feet.
17	Ohio.	C. Eagleton, No. 6.	456	{ Robinson-2	678	16	227	1,273	Gas, 860 feet.
18	Ohio.	C. Eagleton, No. 2.	450	{ Robinson-3	855	10	400	1,100	35 Salt water, 920 feet.
19	Ohio.	C. Eagleton, No. 3.	449	{ do.	893		438	1,062	50 Gas, 895 feet.
20	Ohio.	C. Eagleton, No. 4.	459	{ do.	890	21	429	1,071	25 Gas, 898 feet. Salt water, 917 feet.
				{ do.	898	19	442	1,058	75
				{ do.	896	17	446	1,054	12 Gas, 890 feet.
				{ do.	890	23	441	1,059	50 Gas, 904 feet.
				{ do.	901	17	442	1,053	

S. W.

S. E.

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company	Name of well.	Sur-face ele-va-tion—feet.	Sand				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
2— N. E..	1	Ohio.....	G. W. Jones, No. 1.....	442	Robinson-2 do. do. do. Robinson-1 do. Robinson-2 Robinson-1 do. do. do. do. do. do. do.	835	21	393	1,107	868	75	Gas, 837 feet.
	2	Ohio.....	G. W. Jones, No. 6.....	440		857		417	1,083	860	10	Gas, 800 feet.
	3	Ohio.....	Coulter, No. 6.....	441		852		411	1,089	870	15	Gas, 832 feet.
	4	Ohio.....	Coulter, No. 7.....	448		860		412	1,088	870	15	Gas, 800 feet.
	5	Ohio.....	Coulter, No. 8.....	441		853	27	342	1,158	788	75	Gas, 783 feet.
	6	Ohio.....	Coulter, No. 5.....	450		823	17	373	1,127	830	100	Gas, 823 feet.
	7	Ohio.....	Coulter, No. 3.....	455		848	30	398	1,102			
	8	Ohio.....	Coulter, No. 2.....	455		830	23	375	1,125			
	9	Ohio.....	Coulter, No. 1.....	457		810	22	355	1,145			
	10	Ohio.....	Coulter, No. 4.....	455		800	22	343	1,157			
	11	Ohio.....	G. W. Jones, No. 4.....	459		788	18	333	1,167	802	75	Gas, 784 feet.
	12	Ohio.....	G. W. Jones, No. 2.....	460		799	19	340	1,160	803	200	Gas, 803 feet.
	13	Ohio.....	G. W. Jones, No. 3.....	464		796		332	1,157	808	75	Gas, 796 feet.
	14	Ohio.....	G. W. Jones, No. 7.....	460		800	20	340	1,160		50	Gas, 800 feet.
N. W..	15	Ohio.....	G. W. Jones, No. 5.....	465		887	16	427	1,073	890	50	Salt water, 920 feet.
	1	Riddle.....	Marshall, No. 6.....	471	Robinson-1 Robinson-2 Robinson-1 do. do. Robinson-2 Robinson-1 do. do. Robinson-2 Robinson-1 do. Robinson-2 Marshall, No. 2.	898	8	433	1,067	905		
	2	Riddle.....	Marshall, No. 5.....	466		856	67½	385	1,115	903	150	Gas, 859 feet.
	3	Riddle.....	Marshall, No. 3.....	463		800	20	334	1,166		100	
	4	Riddle.....	Marshall, No. 4.....	470		808	22	345	1,155		100	
	5	Riddle.....	Marshall, No. 7.....	467		825	23	355	1,145		100	
	6	Riddle.....	Marshall, No. 8.....	471		799	31	332	1,168	818		
	7	Riddle.....	Marshall, No. 2.....	471		859	25	392	1,108	992	100	Gas, 885 feet.
	8	Riddle.....	Marshall, No. 1.....	470		802	17	331	1,169			
	9	Treat, Crawford & Treat.	Due, No. 4.....	463		825	26	354	1,146			
	10	Treat, Crawford & Treat.	Due, No. 7.....	461		868	25	337	1,103	930	150	Gas, 885 feet.
	11	Treat, Crawford & Treat.	Due, No. 5.....	457		836	21	459	1,041		125	
						856	21	366	1,134		250	
						824	25	361	1,139	827	250	
						823	37	362	1,138	840	250	
						834	50	377	1,123	838	250	

12	Treat, Crawford & Treat.	Due, No. 6.	462	Shallow.	384	31	372	1,128	840	250	.....
13	Associated Producers.	Due, No. 8.	463	Robinson-1	625	10	163	1,337	.....	.....	.....
14	Treat, Crawford & Treat.	Due, No. 3.	463	do.	388	28	388	1,112	854	.....	State, 635 feet to 850 feet.
15	Treat, Crawford & Treat.	Due, No. 2.	460	do.	860	.....	397	1,103	.....	550	.....
16	Treat, Crawford & Treat.	Due, No. 1.	467	do.	847	33	387	1,113	855	250	.....
17	Ohio.	V. Parker, No. 5.	476	Robinson-2	846	28	379	1,121	848	300	Gas
18	Ohio.	V. Parker, No. 6.	480	do.	888	.....	412	1,088	.....	Gas	808 feet. 6,000,000 cubic feet gas.
19	Ohio.	V. Parker, No. 7.	477	Robinson-1	916	12	436	1,064	920	10	Gas 916 feet.
20	Ohio.	V. Parker, No. 8.	472	Robinson-2	870	18	338	1,107	875	.....	Gas 870 feet.
21	Ohio.	V. Parker, No. 3.	470	do.	852	33	400	1,067	912	200	Best production.
22	Ohio.	V. Parker, No. 1.	463	Robinson-2	883	15	380	1,120	800	140	Gas 855 feet.
23	Ohio.	V. Parker, No. 2.	472	do.	883	40	368	1,132	.....	Gas	878 feet.
24	Ohio.	V. Parker, No. 4.	473	do.	825	.....	423	1,077	893	5	.....
25	Ohio.	Lamb, No. 2.	463	do.	824	26	362	1,138	880	300	Gas 825 feet.
26	Ohio.	Lamb, No. 3.	476	do.	868	33	352	1,148	888	200	Gas 834 feet.
27	Ohio.	Lamb, No. 5.	475	do.	842	29	395	1,105	870	250	Gas 870 feet.
28	Ohio.	Lamb, No. 4.	466	Robinson-2	855	26	379	1,121	.....	.....	.....
29	Samuels & McArthur.	Lamb, No. 1.	466	Robinson-1	868	.....	393	1,107	.....	.....	.....
30	Samuels & McArthur.	Lamb, No. 2.	472	do.	900	6	425	1,075	.....	.....	.....
31	Samuels & McArthur.	Lamb, No. 3.	474	do.	876	31	395	1,105	.....	.....	.....
1	Leeper Bros.	Sexton, No. 1.	467	Stray	891	25	419	1,081	897	.....	.....
2	Leeper Bros.	Sexton, No. 2.	468	Robinson-1	886	18	376	1,124	916	.....	.....
3	Pease & Co.	Lathrop & McCarty, No. 1.	456	Stray	845	5	389	1,111	.....	.....	Dry
4	Pease & Co.	Lathrop & McCarty, No. 5.	460	Robinson-1	860	10	404	1,096	887	.....	Red shale. 624 to 658 feet
5	Pease & Co.	Lathrop & McCarty, No. 2.	454	Robinson-1	857	7	397	1,103	.....	.....	Oil of about 36° gravity.
6	Pease & Co.	Lathrop & McCarty, No. 3.	454	do.	872	12	412	1,088	898	25	.....
7	Pease & Co.	Lathrop & McCarty, No. 4.	455	Robinson-2	788	16	331	1,168	.....	.....	.....
8	Ohio.	Baker, No. 2.	454	do.	882	37	398	1,102	919	20	.....
9	Ohio.	Baker, No. 1.	453	Robinson-3	838	57	384	1,116	903	40	.....
10	Ohio.	Randolph, No. 1.	449	do.	883	19	428	1,072	.....	15	Gas 918 feet.
2	Ohio.	Randolph, No. 7.	436	do.	894	43	439	1,061	920	45	Gas 905 feet.
3	Ohio.	Randolph, No. 2.	435	do.	899	22	446	1,054	899	50	Gas 905 feet.
4	Ohio.	Randolph, No. 6.	443	do.	887	59	421	1,079	923	.....	Bottom of sand
5	Ohio.	Randolph, No. 8.	441	do.	885	21	420	1,080	880	15	Gas 857 feet.
6	Ohio.	Randolph, No. 5.	444	Robinson-1	855	21	420	1,080	890	12	Gas 857 feet.
7	Ohio.	Randolph, No. 4.	443	do.	870	19	421	1,073	875	40	Gas 870 feet.
8	Ohio.	Randolph, No. 3.	443	Robinson-2	833	23	392	1,108	845	.....	Gas 833 feet. Salt water, 880 feet.
9	P. Ewing.	Randolph, No. 5.	441	Robinson-1	801	11	357	1,143	.....	.....	.....
10	P. Ewing.	Randolph, No. 3.	449	Robinson-2	868	23	424	1,076	875	60	Gas 867 feet.
11	P. Ewing.	Randolph, No. 2.	454	do.	852	34	409	1,091	855	75	Gas 852 feet.
				Robinson-1	803	22	360	1,140	805	.....	Gas 803 feet.
				Robinson-2	833	17	390	1,110	843	50	Best production.
				Robinson-1	825	14	376	1,124	.....	.....	No record.
				Robinson-2	881	5	432	1,068	.....	.....	.....
				Robinson-1	887	3	383	1,117	.....	.....	.....

S. W...

S. E...

S. W.	3 Ohio.....	Jones, No. 2.....	434	Robinson-1.....	850	23	416	1,084	860	100	do.....
	4 Ohio.....	Jones, No. 4.....	433	Robinson-2.....	870	6	437	1,063	873	Gas, 870 feet.....	
	5 Ohio.....	Jones, No. 5.....	436	Robinson-3.....	886	10	453	1,047	890	45 Best production.....	
	1 Ohio.....	Mann, No. 1.....	444	Robinson-2.....	861	14	425	1,075	865	50 Gas, 861 feet.....	
S. E.	1 Thayer.....	Due, No. 1.....	463	Robinson-2.....	923	3	460	1,040		Dry Salt water, 994 feet. Well abandoned.....	
	1 Ohio.....	Baker, No. 1.....	452	Robinson-3.....	963	41	500	1,000	1,004	Show Dry Salt water, 994 feet.....	
S. W.	1 McGranahan.....	Gross, No. 1.....	459	Robinson.....	1,080		628	872		Dry Salt water, 1,088 feet.....	
	1 Ohio.....	J. Sears, No. 1.....	468		1,366	4	898	602	1,370	Dry No record.....	
N. E.	1 Ohio.....	L. Smith, No. 4.....	463	Robinson-2.....	1,075		606	894		Dry Salt water.....	
	2 Ohio.....	L. Smith, No. 5.....	461	Robinson-3.....	1,432		963	537	1,451	do.....	
	3 Ohio.....	Abbot, No. 2.....	464	Robinson-2.....	913		451	1,049	915	do.....	
	4 Ohio.....	Abbot, No. 3.....	460	Robinson-1.....	907	20	444	1,056	912	20 Gas, 915 feet.....	
N. W.	5 Ohio.....	Abbot, No. 1.....	460	Robinson-2.....	918		454	1,046	921	20 Gas, 908 feet.....	
	6 Ohio.....	Abbot, No. 4.....	462	Robinson-3.....	918		454	1,046	922	12 Gas, 920 feet.....	
	7 Rock.....	Uhrich, No. 2.....	464	Robinson-1.....	880		420	1,080	972	4 do.....	
	8 Rock.....	Uhrich, No. 3.....	457	Robinson-2.....	1,057		595	905		Salt water, 968 feet.....	
N. W.	1 Crescent.....	Baldwin, No. 2.....	447	Shallow Robinson-1.....	450	35	+7	1,507		Salt water, 1,057 feet.....	
	2 Minnetonka.....	Willard, No. 1.....	460	Robinson-3.....	770	25	413	1,087		Dry No record.....	
	1 Rock.....	Uhrich, No. 1.....	443	Robinson-2.....	940	35	483	1,017		Dry.....	
				do.....	934		487	1,013			
S. E.	1 Benedum-Trees.....	R. Siler, No. 5.....	474	Robinson-2.....	934		630	870		Dry Salt water.....	
	2 Benedum-Trees.....	R. Siler, No. 8.....	477	Robinson-3.....	1,077	2	468	1,032	980	Dry Salt water, 976 feet.....	
	3 Benedum-Trees.....	R. Siler, No. 10.....	473	Robinson-1.....	928					Dry No record.....	
	4 Benedum-Trees.....	R. Siler, No. 7.....	472	Robinson-2.....	800		416	1,084	895	Gas, 892 feet.....	
N. E.	5 Benedum-Trees.....	R. Siler, No. 9.....	473	Robinson-3.....	903		428	1,072	910	Quit in sand.....	
	6 Benedum-Trees.....	R. Siler, No. 6.....	473	Robinson-1.....	825		352	1,148	938	150 Gas, 825 feet. Quit in sand.....	
	7 Brown & Hogue.....	Wasson, No. 11.....	467	Robinson-2.....	900		428	1,072	900	Quit in sand.....	
	8 Brown & Hogue.....	Wasson, No. 10.....	473	Robinson-3.....	897	47	424	1,076	905	Quit in sand.....	
S. E.	9 Brown & Hogue.....	Wasson, No. 12.....	472	Robinson-1.....	880	50	413	1,087	902	Quit in sand.....	
	10 Brown & Hogue.....	Wasson, No. 9.....	475	Robinson-2.....	902	22	429	1,071	940		
	11 Brown & Hogue.....	Wasson, No. 8.....	475	Robinson-3.....	878	45	406	1,094	940		
	12 Brown & Hogue.....	Wasson, No. 7.....	477	Robinson-1.....	910	30	435	1,065			
S. W.	13 Ohio.....	S. Shire, No. 5.....	472	Robinson-2.....	902	35	427	1,073	935		
	14 Ohio.....	S. Shire, No. 6.....	472	Robinson-3.....	908	27	431	1,069			
				do.....	902		430	1,070	902	400 Gas, 902 feet.....	
				do.....	893		421	1,079	900	150 Gas, 905 feet. Salt water 910 feet.....	
N. E.	15 Ohio.....	S. Shire, No. 7.....	472	Robinson-1.....	913		441	1,059	915	200 Gas, 913 feet. Salt water, 930 feet.....	
	16 Ohio.....	S. Shire, No. 16.....	472	Robinson-2.....	914		442	1,058	918	150 Gas, 915 feet.....	
	17 Ohio.....	S. Shire, No. 17.....	472	Robinson-3.....	901		429	1,071	915	200 Gas, 905 feet.....	
	18 Ohio.....	S. Shire, No. 4.....	473	Robinson-1.....	911		438	1,062	915	150 Gas, 911 feet.....	

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
21— N. E..	19 Ohio.		S. Shire, No. 1.	474	Robinson-2	902		428	1,072	920	700 Gas, 915 feet. Salt water 942 feet.	
	20 Ohio.		S. Shire, No. 20.	472	..do.	910		438	1,062	915	30 Gas, 910 feet. Salt water 928 feet.	
	21 Ohio.		S. Shire, No. 22.	471	..do.	916		445	1,055	918	150 Gas, 916 feet.	
	22 Ohio.		S. Shire, No. 2.	472	..do.	902		430	1,070	920	100 Gas, 905 feet.	
	23 Ohio.		S. Shire, No. 18.	472	..do.	900	38	428	1,072	905	250 Gas, 901 feet.	
	24 Ohio.		S. Shire, No. 19.	467	..do.	907		440	1,060	912	250 Gas, 908 feet.	
	25 Ohio.		S. Shire, No. 3.	474	..do.	897		423	1,077	910	200 Gas, 900 feet.	
	26 Ohio.		S. Shire, No. 9.	473	..do.	902		429	1,071	910	100 Gas, 902 feet.	
	27 Ohio.		S. Shire, No. 10.	465	..do.	907		442	1,058	937	150 Gas, 908 feet.	
	1 Ohio.		S. Shire, No. 11.	463	..do.	914		451	1,049	918	200 Gas, 918 feet.	
	2 Ohio.		S. Shire, No. 12.	464	Robinson-1	887		423	1,077	885	100 Gas, 885 feet.	
N. W..	3 Ohio.		S. Shire, No. 13.	464	No sands						Dry Well abandoned.	
	4 Ohio.		S. Shire, No. 15.	467	Robinson-3	911	15	474	1,026	945	60 Gas, 941 feet.	
	5 Ohio.		S. Shire, No. 21.	464	Robinson-2	916		452	1,048	920	200 Gas, 918 feet.	
	6 Ohio.		N. Shier, No. 3.	473	..do.	929		456	1,044	933	50 Gas, 930 feet.	
	7 Ohio.		N. Shier, No. 4.	477	..do.	943		466	1,034	945	50 Gas, 943 feet.	
	8 Ohio.		S. Shire, No. 14.	473	..do.	925		452	1,048	928	150 Gas, 926 feet.	
	9 Ohio.		S. Shire, No. 8.	472	..do.	908		436	1,064	914	100 Gas, 914 feet.	
	10 Ohio.		N. Shier, No. 1.	473	..do.	915		442	1,058	935	270 Gas, 920 feet.	
	11 Ohio.		N. Shier, No. 2.	472	..do.	920		448	1,052	930	240 Gas, 925 feet.	
	12 Ohio.		L. Smith, No. 6.	468	..do.	934	8	466	1,034	936	Dry Gas, 935 feet. Salt water 949 feet. Well abandoned.	
	13 Ohio.		L. Smith, No. 2.	470	..do.	937	17	467	1,033	942	5 Gas, 938 feet. Salt water 954 feet.	
S. W..	14 Ohio.		L. Smith, No. 1.	472	..do.	932		460	1,040	935	500 Gas, 933 feet.	
	15 Ohio.		L. Smith, No. 3.	473	Robinson-3.	955		482	1,018	961	12 Gas, 960 feet.	
	1 Ohio.		B. Smith, No. 1.	472	Robinson-2.	932		460	1,040	935	50 Gas, 932 feet. Salt water 976 feet.	
	2 Ohio.		B. Smith, No. 2.	476	Stray.	873		397	1,103		Dry Salt water, 964 feet.	

3 Ohio.....	J. A. Smith, No. 2	471	Robinson-3	948	477	1,023	938	5 Gas, 936 feet.
4 Ohio.....	J. A. Smith, No. 1	470	Robinson-2	936	466	1,031	951	10 Gas, 950 feet.
5 Red Bank.....	C. McCollum, No. 1	465	Robinson-2	955	490	1,010	975	Reported dry
6 Morrison.....	Hughes, No. 1	454	Robinson-2	904	44	450	1,050	20
7 Morrison.....	Hughes, No. 2	452	do.	895	41	443	1,057	225
8 Morrison.....	Hughes, No. 3	447	do.	900	36	433	1,047	12 Salt water, 942 feet.
9 Treat, Crawford & Treat.	Hughes, No. 4	447	do.	880	36	433	1,067	300
10 Treat, Crawford & Treat.	Hawes, No. 6	446	do.	890	57	444	1,056	300
11 Treat, Crawford & Treat.	Hawes, No. 7	446	do.	904	36	458	1,042	300
12 Treat, Crawford & Treat.	Hawes, No. 10	469	do.	980	33	461	1,039	300
13 Treat, Crawford & Treat.	Hawes, No. 3	468	Robinson-1	880	77	412	1,088	300
14 Treat, Crawford & Treat.	Hawes, No. 2	472	Robinson-2	915	52	443	1,057	300
15 Treat, Crawford & Treat.	Hawes, No. 9	468	do.	928	32	460	1,040	300
16 Treat, Crawford & Treat.	Hawes, No. 8	469	do.	920	49	451	1,049	310
17 Treat, Crawford & Treat.	Hawes, No. 5	470	do.	913	47	443	1,057	300
18 Treat, Crawford & Treat.	Hawes, No. 1	471	Robinson-1	891	79	420	1,080	300
1 Morrison.....	Carleton, No. 5	471	Stray	850	379	1,121	.....	.....
2 Morrison.....	Carleton, No. 4	472	Robinson-2	900	45	429	1,071	949
3 Morrison.....	Carleton, No. 3	472	do.	896	44	424	1,076	500
4 Morrison.....	Carleton, No. 2	467	Shallow	817	208	1,292	.....	Gas.
5 Morrison.....	Carleton, No. 6	461	Robinson-2	902	38	345	1,155	do.
6 Morrison.....	Carleton, No. 8	470	Stray	844	377	1,123	.....	500
7 Morrison.....	Carleton, No. 1	452	Robinson-2	890	44	410	1,060	500
8 Morrison.....	Carleton, No. 9	473	Robinson-1	822	15	428	1,072	500
9 Morrison.....	Carleton, No. 7	461	do.	902	15	432	1,068	500
10 Ohio.....	Carleton, No. 2	455	do.	865	38	413	1,087	.....
11 Ohio.....	Carleton, No. 5	452	do.	900	35	427	1,073	910
12 Ohio.....	Carleton, No. 1	452	do.	878	45	423	1,077	1,200
13 Ohio.....	Carleton, No. 6	451	Robinson-1	891	36	439	1,061	50
14 Ohio.....	Carleton, No. 3	452	Robinson-2	866	27	414	1,086	.....
15 Ohio.....	Carleton, No. 4	450	Robinson-3	890	43	439	1,061	.....
16 Ohio.....	Carleton, No. 8	451	Robinson-2	934	7	483	1,017	.....
17 Ohio.....	Carleton, No. 7	450	Robinson-1	900	448	1,052	905	.....
18 Featzer, Copeland, et al.	Stewart, No. 7	461	Robinson-2	850	36	400	1,100	865
19 Featzer, Copeland, et al.	Stewart, No. 6	468	do.	904	35	454	1,046	.....
20 Featzer, Copeland, et al.	Stewart, No. 8	475	Robinson-2	880	32	429	1,071	884
21 Featzer, Copeland, et al.	Stewart, No. 5	470	Robinson-1	846	29	410	1,060	100 Gas, 881 feet.
22 Featzer, Copeland, et al.	Stewart, No. 4	476	Robinson-2	880	24	428	1,072	.....
23 Featzer, Copeland, et al.	Stewart, No. 3	451	do.	895	34	427	1,073	Quit in sand
24 Featzer, Copeland, et al.	Stewart, No. 2	452	do.	908	52	433	1,067	929
25 Featzer, Copeland, et al.	Stewart, No. 1	455	do.	897	13	427	1,073	969
			Robinson-3	921	7	451	1,049	500 Sand compact and hard at the bottom.
			Robinson-1	894	31	418	1,082	Quit in sand
			do.	848	39	397	1,103	600
			do.	844	40	392	1,108	1,000
			do.	857	36	402	1,098	600
								1,000 White coarse sand

S. E.---

7	Crescent.	Wakefield Hrs., No. 1.....	Robinson-1	873	10	387	1, 113		
			Robinson-2	893	37	407	1, 093	937	
8	Crescent.	H. Martin, No. 1.....	Robinson-1	872	17	387	1, 113	872	
			Robinson-2	892	42	407	1, 093	938	
9	Crescent.	H. Martin, No. 8.....	Robinson-1	878	12	395	1, 105		
			Robinson-2	892	46	409	1, 091	892	943
10	Crescent.	H. Martin, No. 7.....	Robinson-1	866	13	380	1, 120		
			Robinson-2	900	28	414	1, 086	920	-939
11	Crescent.	H. Martin, No. 6.....	Robinson-1	870	5	386	1, 114		
12	Crescent.	H. Martin, No. 9.....	Robinson-2	895	53	411	1, 089	907	948
13	Crescent.	H. Martin, No. 2.....	do.	891	50	414	1, 086		941
			Robinson-1	876	4	394	1, 106		
			Robinson-2	896	24	414	1, 086		925
14	Crescent.	H. Martin, No. 3.....	Robinson-1	867	8	390	1, 110	867	
			Robinson-2	880	31	403	1, 097		907
15	Crescent.	H. Martin, No. 4.....	Robinson-1	868	15	386	1, 114	870	
			Robinson-2	895	27	413	1, 087		950
16	Crescent.	H. Martin, No. 5.....	Robinson-1	861	69	379	1, 121		936
17	Red Bank.	A. Smith, No. 3.....	Robinson-2	887	17	419	1, 081		
18	Red Bank.	A. Smith, No. 1.....	Robinson-1	855	18	373	1, 127		50
19	Red Bank.	A. Smith, No. 2.....	Robinson-2	891	29	409	1, 091		100
20	Red Bank.	A. Smith, No. 4.....	do.	852	51	382	1, 118	892	25
			Robinson-1	855	36	380	1, 120		
21	Morrison.	do.	do.	847	---	368	1, 132		Gas.
			Robinson-2	882	23	403	1, 097		125
22	Morrison.	A. Smith, No. 5.....	Robinson-1	838	12	373	1, 127		
23	Morrison.	A. Smith, No. 3.....	Robinson-2	884	28	419	1, 081		125
			do.	864	27	404	1, 096		125
24	Morrison.	A. Smith, No. 2.....	Robinson-1	836	29	372	1, 128		
			Robinson-2	874	21	410	1, 090		
25	Morrison.	A. Smith, No. 1.....	Robinson-3	945	10	481	1, 019		125
26	Wark.	Dennis, No. 1.....	Robinson-2	883	34	409	1, 091		125
			Robinson-1	836	63	367	1, 133		300
			do.	850	35	373	1, 127		
27	Wark.	Dennis, No. 2.....	Robinson-2	910	8	433	1, 067		
			Robinson-3	925	12	449	1, 051		
			Robinson-4	965	13	488	1, 012		40
			Robinson-1	856	15	373	1, 127		
28	Wark.	Dennis, No. 3.....	Robinson-2	901	39	418	1, 082		
			Robinson-4	970	5	487	1, 013		10
			Robinson-1	847	5	372	1, 128		Show
			Robinson-2	878	10	403	1, 097	878	
29	W. Splane.	Prior, No. 4.....	Stray	899	6	424	1, 076	900	
			Robinson-3	931	11	456	1, 044		
			Stray	942	16	467	1, 033	942	
			Robinson-4	954	12	479	1, 021	955	
30	W. Splane.	Prior, No. 8.....	Robinson-1	827	23	358	1, 142		
			Robinson-2	879	18	410	1, 090		
			Robinson-3	927	14	458	1, 042		874
31	W. W. Splane.	Prior, No. 6.....	Robinson-1	837	75	356	1, 144		Gas, 837 to 872 feet.
			Robinson-2	942	8	442	1, 058	925	
			Robinson-3	942	---	461	1, 039		Salt water, 958 feet

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane feet.			
22— N. E..	32	W. W. Splane	Prior, No. 7.	473	Robinson-1	837	16	364	1,136	874		Gas
					Robinson-2	874	29	401	1,099			
					Robinson-3	936		463	1,037			
	33	W. W. Splane	Prior, No. 5.	472	Robinson-1	851	22	379	1,121	904		
					Robinson-2	904	6	432	1,068			
					Robinson-3	935	30	463	1,037	940		Salt water, 954 to 965 feet.
N. W..	34	W. W. Splane	Prior, No. 2.	465	Robinson-1	840	42	375	1,125			
					Robinson-2	897	6	432	1,068			Sand and slate, 966 to 976 feet.
					Robinson-3	937	1	472	1,028			Salt sand, 980 to 988 feet.
	35	W. W. Splane	Prior, No. 1.	474	Robinson-1	845	25	371	1,129	847		Show Gas, 847 feet.
					Robinson-2	880	5	406	1,094			Show Coal, 825 to 830 feet.
					Robinson-3	940	27	466	1,034			
	36	W. W. Splane	Prior, No. 3.	482	Robinson-1	862	52	380	1,120	899		
					Robinson-2	924	5	442	1,058			
					Robinson-3	935	49	453	1,047	950		Salt water, 907 feet.
	1 2 3	Ohio	H. Martin, No. 3.	484	Robinson-1	890	35	406	1,094	898		Salt water, 980 feet.
					H. Martin, No. 2	879	46	395	1,105	885		Salt water, 980 feet.
					H. Martin, No. 1	874	46	395	1,105	885		
N. W..	4	Ohio	H. Martin, No. 6.	481	.do.	878	61	397	1,103			
					.do.	862	1	390	1,110			
					Robinson-2	907	8	435	1,065	907		
	5	Ohio	H. Martin, No. 4.	472	Robinson-1	872	9	400	1,100			
					Robinson-2	901	36	429	1,071			
					.do.	880	37	425	1,075			
	6	Ohio	H. Martin, No. 5.	455	.do.	905		433	1,067			
					H. Martin, No. 7	472		425	1,075			
					.do.	888	30	432	1,068			Salt water, 926 feet.
	8	Wabash	J. Birch, No. 2.	456	.do.	885	36	423	1,077			
					J. Birch, No. 1	886	22	419	1,081	894		
					Robinson-1	886	22	419	1,081			
	10	Red Bank	J. Birch, No. 2.	467	.do.	826		353	1,147			
					Stray	886	25	413	1,087			
					Robinson-1	900	15	437	1,063			
	11	Red Bank	J. Birch, No. 1.	473	Robinson-2	900		437	1,063			
					.do.							
					.do.							
	12	Ohio	H. Martin, No. 1.	463	Robinson-1	886	25	413	1,087			
					Robinson-2	900	15	437	1,063			
					.do.							

13 Ohio	J. Birch, No. 3.	472	do.	916	14	444	1,056			Salt water, 1,079 feet.
14 Ohio	J. Birch, No. 4.	456	Robinson-2.	952	15	481	1,019			Gas, 907 feet.
15 Ohio	J. Birch, No. 2.	472	Robinson-3.	901	15	445	1,035	907		
16 Morrison	A. & E. Birch, No. 3.	467	Robinson-2.	938	47	482	1,018		5	
17 Morrison	A. & E. Birch, No. 4.	475	do.	909	30	437	1,063			
18 Morrison	A. & E. Birch, No. 6.	455	do.	898	32	431	1,059		20	
19 Morrison	A. & E. Birch, No. 1.	455	Robinson-3.	902	37	427	1,073	907		
20 McArthur	Wasson, No. 13.	477	Robinson-2.	900	16	445	1,055			
21 McArthur	Wasson, No. 14.	454	do.	942	25	487	1,013	942		
22 McArthur	Wasson, No. 15.	453	do.	888	29	433	1,067	900		
23 Morrison	A. & E. Birch, No. 5.	454	do.	901	13	447	1,053		950	
24 Morrison	A. & E. Birch, No. 2.	476	do.	875	20	422	1,078		920	
25 Morrison	Tohill, No. 7.	458	Robinson-1.	860	14	384	1,116		905	
26 Morrison	Tohill, No. 6.	462	Robinson-2.	913	17	437	1,063	913		
27 Morrison	Tohill, No. 5.	481	Robinson-1.	844	11	386	1,103		20	
28 Morrison	Tohill, No. 4.	476	Robinson-2.	893	11	435	1,065		125	
29 Morrison	Tohill, No. 1.	482	do.	890	7	428	1,072		125	
30 Morrison	Tohill, No. 2.	477	Robinson-3.	952	15	490	1,010		967	
31 Morrison	Tohill, No. 3.	472	Robinson-1.	870	10	389	1,111		125	Gas.
1 Brown & Hogue	Wasson, No. 1.	453	Robinson-2.	904	14	423	1,077		125	Gas.
2 Parker & Edwards	Tohill, No. 7.	477	Robinson-1.	860	10	384	1,116		125	
3 Parker & Edwards	Tohill, No. 6.	466	Robinson-2.	889	31	413	1,087		125	
4 Parker & Edwards	Tohill, No. 8.	456	Robinson-1.	872	15	390	1,110		125	
5 Parker & Edwards	Tohill, No. 2.	453	Robinson-2.	897	31	415	1,085		125	
6 Parker & Edwards	Tohill, No. 1.	453	Robinson-3.	872	10	395	1,105		125	
7 Parker & Edwards	Tohill, No. 3.	458	Robinson-2.	897	14	420	1,080		125	Gas.
8 Parker & Edwards	Tohill, No. 4.	479	Robinson-1.	857	10	385	1,115		125	
9 Parker & Edwards	Tohill, No. 5.	455	Robinson-2.	919	7	447	1,053		125	
10 Ohio	Tohill, No. 1.	472	Robinson-1.	832	10	379	1,121			
11 Ohio	Tohill, No. 2.	473	Robinson-2.	869	36	416	1,084	875 } 914		
12 Ohio	Tohill, No. 8.	479	do.	889	40	412	1,088			
13 Ohio	Tohill, No. 3.	478	Robinson-3.	907	28	441	1,059			
14 Ohio	Tohill, No. 4.	469	Robinson-2.	943	24	415	1,085		971	
15 Ohio	Tohill, No. 6.	469	Robinson-3.	871	24	415	1,085			
16 Ohio	Tohill, No. 10.	474	Robinson-1.	903	30	447	1,053			
			do.	844	39	391	1,109			
			do.	855	38	402	1,098			
			do.	863	41	405	1,095			
			do.	881	41	402	1,098			
			Robinson-3.	925	26	470	1,030			
			Robinson-2.	881	46	409	1,091	890		
			Robinson-1.	840	50	367	1,133			
			Robinson-2.	891	21	412	1,098	892		
			Robinson-4.	861	14	383	1,117	896		
			Robinson-1.	997	23	519	981		20	Gas, 891 feet.
			Robinson-3.	998	18	473	1,027	946		
			Robinson-2.	889	35	420	1,080		50	Well abandoned
			do.	895	26	421	1,079	898		
									80	Gas, 896 feet.

S. W.:

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	
S. W. . .	22—	17 Wattford.	Doolittle, No. 6.	462	{	798	8	336	1,164	
						824	25	362	1,138	
	18 Wattford.		Doolittle, No. 7.	474	{	868	15	406	1,094	954
						927	27	465	1,035	
	19 Wattford.		Doolittle, No. 5.	478	{	865	1	391	1,109	915
						905	30	431	1,069	
	20 Wattford.		Doolittle, No. 4.	475	{	947	32	473	1,027	935
						840	18	362	1,138	
	21 Wattford.		Doolittle, No. 3.	468	{	870	8	392	1,108	934
						848	18	373	1,127	
	22 Wattford.		Doolittle, No. 2.	484	{	882	31	407	1,093	901
						856	14	388	1,112	
	23 Wattford.		Doolittle, No. 1.	485	{	942	15	392	1,108	995
						876	10	501	999	
	24 Wattford.		A. Smith, No. 5.	481	{	885	20	370	1,130	923
						855	22	416	1,084	
	1 Red Bank.		A. Smith, No. 6.	481	{	901				No record.
	2 Red Bank.		A. Smith, No. 6.	474	{	855	26	374	1,126	Dry.
						857		376	1,124	
	3 Morrison.		A. Smith, No. 6.	480	{	970	10	489	1,011	Gas, 837 feet.
						837		363	1,137	
	4 Ohio.		A. Smith, No. 9.	480	{	885		411	1,089	Gas, 885 feet.
						948	16	474	1,026	
	5 Ohio.		A. Smith, No. 3.	481	{	852	18	372	1,128	15 Gas, 963 feet.
						959	9	479	1,021	
	6 Ohio.		A. Smith, No. 2.	480	{	833	52	372	1,128	75
						932	31	451	1,049	
S. E. . .	22—				{	853	59	373	1,127	25
						940	27	460	1,040	

7 Ohio.....	A. Smith, No 8.....	481	Stray	921	10	440	1,060	962	35	Gas, 955 feet.
8 Ohio.....	A. Smith, No. 5.....	483	Robinson-3	950	20	469	1,031	967	40	No record.
9 Watford.....	Doolittle, No. 12.....	487	Robinson-1	849	24	366	1,134			do.
10 Watford.....	Doolittle, No. 14.....	486								do.
11 Watford.....	Doolittle, No. 9.....	484								do.
12 Watford.....	Doolittle, No. 11.....	485								do.
13 Watford.....	Doolittle, No. 13.....	486								do.
14 Watford.....	Doolittle, No. 15.....	486								do.
15 Ohio.....	A. Smith, No. 7.....	489	Robinson-1	841	6	352	1,148			35 Gas, 945 feet.
16 Ohio.....	A. Smith, No. 6.....	490	Robinson-3	942	40	453	1,047	952	40	Gas, 855 feet.
17 Ohio.....	A. Smith, No. 1.....	491	Robinson-3	855	40	365	1,135	858		
18 Ohio.....	A. Smith, No. 4.....	487	Robinson-3	934	5	464	1,035			
19 Ohio.....	S. Tohill (1 acre), No. 1.....	484	Robinson-3	844	4	353	1,147		25	
20 Splane.....	Erubaker, No. 7.....	485	Robinson-3	932	43	441	1,059			
21 Bruner & Splane.....	Erubaker, No. 5.....	487	Robinson-3	857	12	370	1,130		50	
22 Bruner & Splane.....	Erubaker, No. 4.....	487	Robinson-3	939	15	452	1,048			
23 Bruner & Splane.....	Erubaker, No. 6.....	479	Robinson-3	845	3	361	1,139		20	
24 Bruner & Splane.....	Erubaker, No. 1.....	479	Robinson-3	951	14	467	1,035			Quit in sand.
25 Bruner & Splane.....	Erubaker, No. 2.....	484	Robinson-3	836	21	351	1,149			
26 Bruner & Splane.....	Erubaker, No. 3.....	481	Robinson-3	875	22	390	1,100			
1 Peoples Oil & Gas Co....	Hopkins (upper) No. 2.....	521	Robinson-3	900	12	413	1,087	902		
2 Peoples Oil & Gas Co....	Hopkins (upper), No. 1.....	515	Robinson-3	956	29	469	1,031	960		
3 Morrison.....	Walters, No. 1.....	522	Robinson-3	883	29	396	1,104	883		
4 Morrison.....	Martin, No. 7.....	512	Robinson-3	854	11	375	1,125			Stray lens.
5 Morrison.....	Martin, No. 5.....	504	Robinson-3	894	16	415	1,085			Broken sand.
6 Morrison.....	Martin, No. 6.....	505	Robinson-3	862	24	383	1,117	896		
7 Morrison.....	Martin, No. 1.....	509	Robinson-3	896	10	417	1,083	958		
			Robinson-3	958	26	479	1,021	958		
			Robinson-3	879	34	395	1,105	879		
			Robinson-3	845		364	1,136			Gas, 879 feet.
			Robinson-3	936	8	455	1,045	936		
			Robinson-3	934	24	473	1,027	934		
			Robinson-3	909	97	388	1,112			Black slate, 944 to 954 feet.
			Robinson-3	1,013	41	492	1,008			
			Robinson-3	918	22	403	1,097			Salt water, 1,013 feet. Well abandoned.
			Robinson-3	912		390	1,110			
			Robinson-3	937		415	1,085			
			Robinson-3	964	11	442	1,058		45	
			Robinson-3	886	5	374	1,128			Gas sand.
			Robinson-3	922	2	410	1,090	922		
			Robinson-3	976	34	464	1,036	980		
			Robinson-3	907	19	403	1,097	912		
			Robinson-3	977	9	473	1,027		50	
			Robinson-3	962	6	457	1,043	975		
			Robinson-3	975	16	470	1,030			
			Robinson-3	1,017	7	512	988			Well abandoned.
			Robinson-3	936	22	427	1,073		50	

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
23— N. E.	8	Morrison	Martin, No. 2.	498	Robinson-1.	905	45	407	1,093	915		50	
	9	Morrison	Martin, No. 3.	500	Robinson-2	909	10	409	1,091				
					Robinson-3	937	23	437	1,063				
	1	Ohio	Reed, No. 8.	501	Stray	963	5	463	1,037			50	Gas, 917 feet.
	2	Ohio	Reed, No. 9.	492	Robinson-2	915	7	414	1,086	917		80	No record. Well abandoned.
N. W.	3	Ohio	Reed, No. 7.	500	Robinson-1.								No record.
	4	Ohio	Reed, No. 4.	484	do.	868		384	1,116			Dry	No record.
	5	Parker-Crowly	Crowly, No. 1.	490	Robinson-2	875	20	385	1,115			5	Well abandoned.
	6	Parker-Crowly	Crowly, No. 3.	496	Robinson-2	908	47	418	1,082	975			
	7	Parker-Crowly	Crowly, No. 2.	500	Stray	910	10	414	1,086				
	8	Parker-Crowly	Crowly, No. 4.	500	Robinson-2	935	5	439	1,061	932			Gas, 926 feet.
	9	Parker-Edwards	Crowly, No. 1.	500	do.	920	21	420	1,080	930			Salt water, 948 feet.
	10	Parker-Edwards	Crowly, No. 2.	485	Robinson-1.	920	18	420	1,080	948			Salt water, 905 feet.
				492		880		395	1,105	905	932		Salt water, 906 feet. Well abandoned.
	11	Wark	Dennis, No. 4.	484	Robinson-1	860	57	376	1,124				
	12	Ohio	C. T. Stewart, No. 4.	482	Robinson-3	932	18	442	1,052		964	75	
	13	Ohio	C. T. Stewart, No. 1.	474	Robinson-3	874	6	392	1,108				80 Gas, 930 feet.
	14	Ohio	C. T. Stewart, No. 5.	478	Robinson-2	919	22	437	1,063	932		60	Gas, 912 feet.
	15	Ohio	C. T. Stewart, No. 3.	487	Robinson-1	875	17	401	1,099	902			
	16	Ohio	C. T. Stewart, No. 2.	491	Robinson-2	849	35	391	1,109	876			50 Gas, 876 feet.
	17	Ohio	Sparks, No. 1.	493	do.	888		401	1,099			300	Gas, 895 feet.
	18	Ohio	Sparks, No. 2.	504	Robinson-3	935		444	1,056	936		45	Gas, 930 feet.
					do.	932		434	1,066	940		45	Gas, 936 feet.
	19	Ohio	Sparks, No. 3.	482	do.	940		436	1,064	946		20	Gas, 944 feet.
					Robinson-1.	876	24	384	1,106			150	Gas, 915 feet.
					Robinson-2	910	57	428	1,072	920			

S. W.	20 Ohio.....	Sparks, No. 4	491	do.....	920	21	429	1,071	932	100 Gas, 924 feet.
	21 Ohio.....	Sparks, No. 5	497	Stray.....	911	6	417	1,086	914	40 Gas, 935 feet.
	1 Red Bank.....	Mitchell, No. 3	486	Robinson-2.....	934	6	366	1,103	936	500
	2 Red Bank.....	Mitchell, No. 2	496	Robinson-1.....	885	14	395	1,134	887	20
	3 Red Bank.....	Mitchell, No. 1	490	Robinson-3.....	930	17	434	1,066	930	250
	4 Ohio.....	do.....	490	Robinson-1.....	870	41	380	1,120	870	Robinson-2.....
	5 Ohio.....	Mitchell, No. 2	493	Robinson-3.....	894	21	404	1,096	894	Robinson-3.....
	6 Ohio.....	Mitchell, No. 3	496	Robinson-1.....	930	10	440	1,060	930	Robinson-2.....
	7 Ohio.....	McCulpin, No. 7	494	Robinson-3.....	867	7	374	1,126	867	Robinson-1.....
	8 Ohio.....	McCulpin, No. 9	500	Robinson-3.....	937	444	444	1,056	937	Robinson-3.....
	9 Ohio.....	McCulpin, No. 13	495	Robinson-3.....	937	443	443	1,057	940	Robinson-3.....
	10 Ohio.....	McCulpin, No. 19	494	Robinson-3.....	882	382	382	1,118	882	Robinson-1.....
	11 Ohio.....	McCulpin, No. 15	493	do.....	861	24	366	1,134	861	do.....
	12 Pure.....	Stewart Heirs, No. 3	503	Robinson-2.....	866	16	373	1,127	866	Robinson-2.....
	13 Pure.....	Stewart Heirs, No. 4	515	Robinson-1.....	855	15	352	1,148	855	Robinson-1.....
	14 Pure.....	Stewart Heirs, No. 5	513	Robinson-2.....	930	23	427	1,073	930	Robinson-3.....
	15 Pure.....	Stewart Heirs, No. 6	509	Robinson-2.....	898	4	383	1,117	898	Robinson-2.....
				Robinson-3.....	920	21	405	1,095	920	Robinson-3.....
				do.....	880	17	367	1,133	880	Robinson-1.....
				Robinson-2.....	890	26	381	1,119	890	Robinson-2.....
				Robinson-4.....	928	7	419	1,081	928	Robinson-4.....
				Robinson-1.....	1,002	25	493	1,007	1,002	Robinson-1.....
				Robinson-4.....	902	3	404	1,096	902	Robinson-4.....
				Stray.....	990	4	492	1,008	990	Stray.....
				Stray.....	1,045	2	547	953	1,045	Stray.....
				Robinson-1.....	1,109	3	611	889	1,109	Robinson-1.....
				Robinson-1.....	895	25	398	1,102	895	Robinson-1.....
				Robinson-4.....	981	21	484	1,016	981	Robinson-4.....
				Robinson-3.....	890	24	391	1,109	890	Robinson-3.....
				Robinson-1.....	962	20	463	1,037	962	Robinson-1.....
				Robinson-3.....	891	15	392	1,108	891	Robinson-3.....
				Robinson-3.....	940	7	441	1,059	940	Robinson-3.....
				Robinson-4.....	986	18	487	1,013	986	Robinson-4.....
				Robinson-3.....	950	10	446	1,054	950	Robinson-3.....
				Robinson-4.....	998	18	494	1,006	998	Robinson-4.....
				Robinson-3.....	886	6	388	1,112	886	Robinson-3.....
				Robinson-2.....	928	30	430	1,070	928	Robinson-2.....
				Robinson-2.....	932	18	386	1,114	932	Robinson-2.....
				Robinson-2.....	948	14	422	1,078	948	Robinson-2.....
				Robinson-1.....	890	27	377	1,123	890	Robinson-1.....
				Robinson-2.....	936	24	423	1,077	936	Robinson-2.....
				Robinson-3.....	976	22	460	1,040	976	Robinson-3.....
				Stray.....	1,038	10	522	978	1,038	Stray.....
				Stray.....	1,087	8	571	929	1,087	Stray.....
				Robinson-2.....	912	18	386	1,114	912	Robinson-2.....
				Robinson-2.....	948	14	422	1,078	948	Robinson-2.....

S. W.:

En.

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
23— S. E.	7	Crescent.	Hooker, No. 5.	512	Robinson-1.	855		343	1,157				No record.	
	8	Ohio.	Hooker, No. 2.	512	Robinson-3.	950	10	438	1,062		966	25		
	9	Ohio.	Hooker, No. 3.	524	Robinson-1.	916	6	392	1,108		980			
	10	Ohio.	Hooker, No. 4.	524	do.	918	6	394	1,106		981	Light		
	11	Ohio.	Hooker, No. 1.	524	do.	919	30	395	1,105					
				524	Robinson-3.	966	17	442	1,058		983			
24— N. E. N. W.	1	Ohio.	O. Mann, No. 1.	529	Robinson-1.	918	30	389	1,111					
					Robinson-3.	980		451	1,049			Dry	Salt water, 990 feet.	
	1	Ohio.	Morrison, No. 1.	522	Robinson-1.	935	15	413	1,087		985		Slate, 950 to 953 feet.	
	2	Ohio.	Morrison, No. 2.	525	Robinson-2.	953	10	431	1,069			25		
	3	Morrison.	Weirich, No. 1.	517	do.	958	5	433	1,067					
	4	Morrison.	Weirich, No. 4.	527	Robinson-1.	911	33	394	1,106			50		
S. W.	5	Morrison.	Weirich, No. 3.	523	Robinson-1.	920	49	399	1,107		932		Gas, 920 feet.	
	6	Morrison.	Weirich, No. 2.	522	Robinson-2.	950	21	427	1,073			50	Gas, 922 feet.	
	1	Morrison.	Butler, No. 2.	523	Robinson-1.	912	14	390	1,110					
	2	Morrison.	Butler, No. 1.	523	Robinson-2.	936		413	1,086			50		
	3	Morrison.	Butler, No. 3.	523	Robinson-3.	970		448	1,052					
	4	Morrison.	Butler, No. 4.	523	Robinson-1.	925	8	402	1,098		982	3		

S. E.	7 Red Bank.....	511	{ Robinson-1	885	18	374 1,126	40	.....
	8 Red Bank.....	502	{ Robinson-3	948	30	437 1,063	25	.....
	9 Ohio.....	500	{ Robinson-1	872	65	370 1,130	5	.....
	10 Ohio.....	518	{ Robinson-3	905	11	458 1,042	10	.....
	11 Ohio.....	520	{ Robinson-3	905	10	405 1,095	100	.....
	12 Ohio.....	520	{ do.....	969	27	451 1,049	Light Show	.....
	1 Red Bank.....	518	{ Robinson-1	923	32	403 1,097	Salt water, 986 feet. Well abandoned	.....
	2 Red Bank.....	498	{ Robinson-2	932	19	432 1,068	Gas, 923 feet.	.....
	3 Red Bank.....	488	{ Stray	881	10	363 1,137	Salt water, 955 feet.	.....
	1 Crescent.....	497	{ Robinson-3	981	11	463 1,037	Dry	.....
	2 Crescent.....	498	{ Robinson-2	923	12	425 1,075	950	.....
	3 Haywood.....	495	{ Robinson-3	977	.....	479 1,021	Quit in sand	.....
N. F.	1 Mahutska.....	491	{ Robinson-2	939	.....	451 1,049	965	.....
	2 Mahutska.....	496	{ Robinson-1	890	35	393 1,107	Coal, 725 feet	.....
	3 Mahutska.....	497	{ Robinson-2	942	10	445 1,055	Salt water, 978 feet. Well abandoned	.....
	4 Mahutska.....	498	{ Robinson-3	960	5	463 1,037	Salt water, 970 feet. Well abandoned	.....
	5 Mahutska.....	499	{ Robinson-1	885	35	387 1,113	Salt water, 976 feet	.....
	6 Mahutska.....	496	{ Robinson-2	935	12	437 1,063	Coal, 725 feet	.....
	7 Mahutska.....	495	{ Robinson-3	958	18	460 1,040	Salt water, 978 feet. Well abandoned	.....
	8 Mahutska.....	494	{ Robinson-1	890	20	395 1,095	Dry	.....
	9 Mahutska.....	493	{ Robinson-2	964	16	469 1,031	.....	.....
	10 Mahutska.....	492	{ Robinson-3	867	19	375 1,125	.....	.....
	11 Mahutska.....	491	{ do.....	937	24	445 1,055	943	.....
	12 Mahutska.....	490	{ do.....	959	7	468 1,032	978	.....
N. W.	1 Mahutska.....	496	{ Robinson-1	875	62	379 1,121	Dry	.....
	2 Mahutska.....	497	{ Robinson-3	962	13	466 1,034	Salt water, 978 feet	.....
	3 Mahutska.....	498	{ Robinson-1	849	31	352 1,148	.....	.....
	4 Mahutska.....	499	{ Robinson-3	886	14	389 1,111	.....	.....
	5 Mahutska.....	495	{ Stray	914	22	417 1,083	Salt water, 922 feet. Well abandoned	.....
	6 Mahutska.....	494	{ Robinson-2	835	44	347 1,153	.....	.....
	7 Mahutska.....	493	{ Robinson-1	905	8	417 1,083	.....	.....
	8 Mahutska.....	492	{ Robinson-2	922	11	434 1,066	Dry	.....
	9 Mahutska.....	491	{ Stray	950	20	462 1,038	Show	.....
	10 Mahutska.....	490	{ Robinson-3	838	.....	345 1,155	150	.....
	11 Mahutska.....	489	{ Robinson-1	909	28	416 1,084	.....	.....
	12 Mahutska.....	488	{ Robinson-2	956	9	463 1,037	.....	.....
	13 Mahutska.....	487	{ Robinson-3	853	17	356 1,144	.....	.....
N. W.	1 Mahutska.....	497	{ Robinson-1	927	6	430 1,070	996	.....
	2 Mahutska.....	496	{ Robinson-2	900	6	463 1,037	.....	.....
	3 Mahutska.....	495	{ Robinson-3	800	15	356 1,144	150	.....
	4 Mahutska.....	494	{ Robinson-1	914	46	410 1,090	.....	.....
	5 Mahutska.....	493	{ Robinson-2	880	32	384 1,116	.....	.....
	6 Mahutska.....	492	{ Robinson-3	934	6	438 1,062	.....	.....
	7 Mahutska.....	491	{ Robinson-1	860	10	352 1,148	Show	.....
	8 Mahutska.....	490	{ Robinson-2	914	46	406 1,094	150	.....
	9 Mahutska.....	489	{ Robinson-3	875	62	379 1,121	.....	.....
	10 Mahutska.....	488	{ Robinson-1	849	31	352 1,148	.....	.....
	11 Mahutska.....	487	{ Robinson-3	886	14	389 1,111	.....	.....
	12 Mahutska.....	486	{ Stray	914	22	417 1,083	.....	.....

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
25— N W.	10	Mahutska	H. Weirich, No. 4	508	Robinson-1	866	15	358	1,142			
	11	Mahutska	H. Weirich, No. 10	503	Robinson-2	923	46	415	1,085		150	
	12	Mahutska	H. Weirich, No. 9	484	Robinson-1	835	25	332	1,088			
	13	Mahutska	H. Weirich, No. 1	498	Robinson-2	920	28	417	1,083	832		
S W.	14	Mahutska	H. Weirich, No. 7	479	Robinson-1	903	35	419	1,081			
	1	Red Bank	Smith, No. 3	493	Robinson-2	842	13	344	1,136		150	
	2	Red Bank	Smith, No. 2 "B"	473	Robinson-1	914	32	416	1,084			
	3	Red Bank	Smith, No. 1 "B"	473	Robinson-2	824	14	345	1,155		150	
	4	Red Bank	Maxwell, No. 3	486	Robinson-1	888	60	409	1,091			No record.
	5	Red Bank	Maxwell, No. 1	490	Robinson-2	815	11	342	1,158			
	6	Red Bank	Maxwell, No. 2	490	Stray	902	25	429	1,071		50	
	7	Red Bank	Maxwell, No. 4	488	Robinson-1	795	22	322	1,178			
	8	Ohio	Smith, No. 1	469	Robinson-2	842	32	369	1,131			
	9	Ohio	Smith, No. 2	480	Robinson-1	830	10	344	1,156			
	10	Ohio	Maxwell, No. 1	483	Robinson-2	912	15	426	1,074	912	10	
	11	Ohio	Maxwell, No. 2	484	Stray	785	24	295	1,205			
	12	Ohio	Maxwell, No. 3	483	Robinson-1	852	12	362	1,138		25	
					Stray	815	15	325	1,175	820	25	
					Robinson-2	906	10	416	1,084			
					Robinson-3	830	8	342	1,158			
					Robinson-1	918	18	430	1,070		50	
					Robinson-2	808	30	339	1,161			
					Robinson-3	885	22	416	1,084			
					do	902	23	422	1,078		100	
					Robinson-1	906	7	423	1,077			
					Robinson-2	820	26	336	1,164	832		
					Robinson-1	895	9	411	1,089			
					Robinson-2	839	4	376	1,124			
					Robinson-1	910	18	427	1,073			

13	Ohio	Maxwell, No. 4.	486	{	do.	Robinson-3.	891	13	405	1,095		15	No record
14	Whittaker	Docummen, No. 1.	477				937	18	451	1,049			do
15	Whittaker	Docummen, No. 2.	464										do
16	Whittaker	Docummen, No. 3.	465										do
17	Whittaker	Docummen, No. 4.	461										do
18	Whittaker	Docummen, No. 5.	481										do
19	Whittaker	Docummen, No. 7.	464										do
20	Morrison	C. Docummen, No. 1.	477	{	Robinson-1.		814	27	327	1,163			
21	Morrison	C. Docummen, No. 4.	485	{	Robinson-3.		917	19	410	1,060		100	
22	Morrison	C. Docummen, No. 8.	484	{	do.	Robinson-1.	834	32	349	1,151		40	
23	Morrison	C. Docummen, No. 3.	472	{	Robinson-2.		849	20	365	1,133			
24	Morrison	C. Docummen, No. 5.	480	{	Robinson-3.		885		411	1,089			
25	Morrison	C. Docummen, No. 6.	475	{	Robinson-1.		907	8	423	1,077			Dry
					Robinson-2.		815		343	1,157			
					Robinson-3.		875	18	403	1,097		300	
					Robinson-1.		824	36	344	1,156		50	
					do.		824		349	1,151			
					Robinson-2.		842	18	367	1,133		50	
	1 American Oil & Development Co.	Richart, No. 7.	474		Robinson-1.		822		348	1,152	889	50	
	2 American Oil & Development Co.	Richart, No. 23.	480	{	do.		849	27	369	1,131	854	24	
					Shallow.		700	8	211	1,289			
	3 Reel	Coulter, No. 2.	489										
	4 Reel	Coulter, No. 3.	488	{	Robinson-3.		940	10	451	1,049			
					Robinson-4.		954		465	1,035		968	
					Robinson-1.		870	12	382	1,118			
					Robinson-2.		922		434	1,066	945		
													Coal, 695 feet. Gas, 710 feet. Salt water, 710 feet.
													Quit in sand. Gas, 870 feet. Salt water, 968 feet. Well abandoned.
1	Ohio	Dyar, No. 2.	511										No record
2	Ohio	Dyar, No. 1.	490	{	Robinson-1.		838	30	348	1,152			
3	Ohio	Dyar, No. 7.	491	{	Robinson-2.		897	55	407	1,093		25	
4	Ohio	Dyar, No. 5.	505	{	Robinson-1.		866	8	375	1,125			
5	Ohio	Dyar, No. 3.	508	{	Robinson-3.		910	22	419	1,081	915	120	
6	Ohio	Dyar, No. 4.	514	{	Robinson-1.		845	40	340	1,100			
7	Ohio	Dyar, No. 6.	515	{	Robinson-2.		910	23	405	1,093	910	60	Gas, 845 feet.
8	Crawford & Milligan	J. Wright, No. 17.	514	{	Robinson-3.		935	16	427	1,073	901	60	
9	Crawford & Milligan	J. Wright, No. 14.	510	{	Stray		812	12	298	1,202			
10	Crawford & Milligan	J. Wright, No. 10.	510	{	Robinson-2.		916	18	402	1,098	920	80	
11	Crawford & Milligan	J. Wright, No. 9.	513	{	Robinson-1.		915	15	400	1,100		80	
					Robinson-2.		887		341	1,159			
					Stray		904	36	390	1,110	909	944	
					Robinson-1.		845	20	335	1,165			
					Robinson-2.		891	47	381	1,119			
					Robinson-1.		855	5	345	1,155			
					Robinson-2.		893	46	383	1,117			
					Robinson-1.		867	10	352	1,148		Show	
					Robinson-2.		895	40	384	1,116			

S. E.

26—N. E.:—

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— N. E.	12	Red Bank.	H mblin, No. 1 "R. B."	508	Robinson-1	853	17	345	1,155				
	13	Red Bank.	Hamblin, No. 2 "R. B."	506	Robinson-2	891	15	383	1,117			100	
	14	Red Bank.	Hamblin, No. 1 "B"	499	Robinson-1	847	34	341	1,159				
	15	Ohio.	Cullison-Wagner, No. 3.	504	do.	848	9	349	1,151				
	16	Ohio.	Cullison-Wagner, No. 1.	499	Robinson-2.	884	16	385	1,115				
	17	Ohio.	Cullison-Wagner, No. 2.	494	Robinson-2.	897	24	398	1,102	902			No record.
	18	Red Bank.	Weirich, No. 1.	503	Shallow.	480	25	+14	1,514				Gas, 820 feet.
	19	Red Bank.	Weirich, No. 2.	506	Robinson-2	892	34	398	1,102	895		60	
	20	Wabash.	Weirich, No. 1.	498	Robinson-1	845	11	342	1,158				
	21	Ohio.	Weirich, No. 5.	498	Robinson-2	886	20	383	1,117	886			
	22	Ohio.	Weirich, No. 1.	497	Robinson-3	940	10	446	1,054				
	23	Ohio.	Weirich, No. 3.	495	Robinson-1	846	9	340	1,160				Gas 846 feet.
	24	Ohio.	Weirich, No. 6.	498	Robinson-2	890	19	384	1,116			100	
	25	Ohio.	Weirich, No. 2.	509	Robinson-1	843	50	345	1,155				
	26	Ohio.	Weirich, No. 4.	498	Robinson-3	911	37	343	1,087				
N. W.	1	Crawford & Milligan.	Weirich, No. 1.	498	Robinson-1	845		347	1,153				Gas, 845 feet.
	2	Crawford & Milligan.	Weirich, No. 5.	497	Robinson-2	879	4	381	1,119				
	3	Crawford & Milligan.	Weirich, No. 1.	497	Robinson-3	925	23	427	1,073	926		150	
			Weirich, No. 6.	498	do.	910	30	413	1,087			200	
			Weirich, No. 2.	509	do.	905	35	410	1,090				No record.
			Weirich, No. 4.	498	Stray.	827	6	318	1,182			300	
			J. Wright, No. 8.	515	Robinson-1	825	15	327	1,173				Gas, 830 feet.
			J. Wright, No. 5.	508	Robinson-2	892	14	394	1,106	898		110	
			J. Wright, No. 13.	510	Robinson-1	840		325	1,175				
			J. Wright, No. 13.	510	Robinson-2	882	2	367	1,133				

4	Crawford & Milligan.....	J. Wright, No. 7.....	Robinson-1.....	840	61	330	1,170	.....	Show	.....
			Robinson-2.....	884	4	374	1,126	.....	
			Robinson-3.....	904	4	394	1,106	.....	
5	Crawford & Milligan.....	J. Wright, No. 6.....	Robinson-4.....	988	12	478	1,022	.....	1000	Salt water, 1,000 feet.
			Robinson-1.....	933	7	342	1,138	.....	
			Robinson-3.....	912	28	401	1,099	.....	940	
			Robinson-1.....	840	10	334	1,166	.....	
6	Crawford & Milligan.....	J. Wright, No. 3.....	Robinson-2.....	870	.....	364	1,136	888		
			Robinson-3.....	915	12	409	1,091	915		
			Robinson-1.....	862	5	346	1,154	.....	
7	Crawford & Milligan.....	J. Wright, No. 16.....	Robinson-2.....	888	2	372	1,128	.....	
			Robinson-3.....	920	20	404	1,096	.....	972	
			Robinson-1.....	855	5	342	1,158	.....	
8	Crawford & Milligan.....	J. Wright, No. 11.....	Robinson-2.....	893	41	380	1,120	.....	
			do.....	872	27	363	1,137	.....	
9	Crawford & Milligan.....	J. Wright, No. 15.....	Robinson-3.....	935	18	426	1,074	.....		Quit in sand.
			Robinson-2.....	880	32	377	1,123	.....	
10	Crawford & Milligan.....	J. Wright, No. 1.....	Robinson-3.....	917	6	414	1,086	.....		930
			Robinson-2.....	839	51	357	1,143	873		
11	Crawford & Milligan.....	J. Wright, No. 2.....	Stray.....	825	10	322	1,178	.....	
			Robinson-2.....	865	23	362	1,138	.....	
12	Crawford & Milligan.....	J. Wright, No. 12.....	Robinson-3.....	960	9	457	1,043	.....		969
			Stray.....	831	8	324	1,176	.....		Quit in sand.
13	Crawford & Milligan.....	J. Wright, No. 4.....	Robinson-2.....	900	3	393	1,107	.....	
			Robinson-3.....	950	27	443	1,037	.....		Quit in sand.
			Stray.....	818	8	316	1,184	.....	40	Gas, 820 feet.
14	Ohio.....	Thompson, No. 3.....	Robinson-2.....	859	30	357	1,143	870		
			Robinson-1.....	838	29	339	1,161	.....	
15	Ohio.....	Thompson, No. 4.....	Robinson-2.....	870	18	371	1,129	870		Gas, 845 feet.
			Stray.....	820	.....	317	1,183	.....	
16	Parker-Edwards.....	Thompson, No. 6.....	Robinson-2.....	885	10	382	1,118	889		Gas, 820 feet.
			Robinson-1.....	834	.....	339	1,161	.....	
17	Parker-Edwards.....	Thompson, No. 5.....	Robinson-2.....	870	.....	375	1,125	.....	910	Gas, 834 feet.
			Stray.....	815	.....	323	1,177	.....		Gas, 815 feet.
18	Parker-Edwards.....	Thompson, No. 3.....	Robinson-2.....	872	.....	380	1,120	.....	
			Robinson-1.....	835	15	345	1,155	.....	
19	Ohio.....	Fowler, No. 1.....	Robinson-2.....	871	33	381	1,119	.....	120	Gas, 874 feet.
			do.....	876	31	380	1,120	.....	80	Gas, 880 feet.
20	Ohio.....	Fowler, No. 2.....	do.....	875	28	380	1,120	880	150	Gas, 880 feet.
21	Ohio.....	Fowler, No. 3.....	do.....	876	32	388	1,111	898	100	Gas, 878 feet.
22	Ohio.....	Fowler, No. 4.....	do.....	895	12	389	1,112	890	200	Gas, 897 feet.
23	Ohio.....	Fowler, No. 7.....	do.....	888	34	388	1,112	890		
24	Ohio.....	Fowler, No. 5.....	do.....	897	27	395	1,105	904	150	Gas, 901 feet.
25	Ohio.....	Fowler, No. 6.....	do.....	867	35	373	1,127	874	200	Gas, 872 feet.
1	Morrison.....	Hughes, No. 6.....	Robinson-1.....	863	42	367	1,133	.....	
			do.....	827	73	330	1,170	872	40	
2	Morrison.....	Hughes, No. 7.....	Robinson-2.....	905	7	408	1,092	.....	
			do.....	896	35	394	1,106	.....	
3	Morrison.....	Hughes, No. 5.....	Robinson-1.....	862	45	367	1,133	.....	
4	Morrison.....	Hughes, No. 8.....	Robinson-3.....	931	16	436	1,064	.....	150	
5	Morrison.....	Hughes, No. 4.....	Robinson-2.....	893	49	390	1,110	.....	
			Robinson-1.....	862	31	364	1,136	.....	
6	Morrison.....	Hughes, No. 3.....	Robinson-3.....	905	31	405	1,095	.....	

S. W. .

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— S. W. . . .	7	Morrison.	Hughes, No. 2. . . .	499 {	Robinson-1.	818	77	319	1,181	861			
	8	Morrison.	Hughes, No. 1. . . .	501 {	Robinson-2.	901	21	402	1,098				
	9	Red Bank.	Renchen, No. 2. . . .	497 {	do.	896	21	395	1,105			800	
	10	Red Bank.	Renchen, No. 3. . . .	497 {	Robinson-1.	866	23	369	1,131	870		75	
	11	Red Bank.	Renchen, No. 1. . . .	504 {	Robinson-2.	898	52	394	1,106	904		200	
	12	Ohio.	Renchen, No. 3. . . .	500 {	do.	900	33	400	1,100			100	
	13	Ohio.	Rencher, No. 2. . . .	500 {	Robinson-1.	845		345	1,155				
	14	Ohio.	Rencher, No. 1. . . .	504 {	Robinson-2.	908	49	408	1,092			29	
	15	Red Bank.	Wampler, No. 1. . . .	498 {	Robinson-1.	839	26	385	1,165				
	16	Red Bank.	Wampler, No. 3. . . .	498 {	Robinson-2.	907	35	403	1,097				
	17	Red Bank.	Wampler, No. 2. . . .	500 {	Robinson-1.	830	23	382	1,168				
	18	Ohio.	Wampler, No. 3. . . .	500 {	Robinson-2.	900	45	402	1,098				
	19	Ohio.	Wampler, No. 2. . . .	505 {	Robinson-3.	942	8	414	1,056			100	
	20	Ohio.	Wampler, No. 1. . . .	500 {	Robinson-1.	897		397	1,103				
	21	Ohio.	Leonard, No. 4. . . .	494 {	Robinson-2.	920	53	420	1,080				
	22	Ohio.	Leonard, No. 1. . . .	499 {	Robinson-3.	879	22	379	1,121				
	23	Ohio.	Leonard, No. 2. . . .	496 {	Robinson-1.	930	18	430	1,070			40	
	24	Ohio.	Leonard, No. 3. . . .	484 {	Robinson-2.	843	21	343	1,153				
	25	Ohio.	Renchen, No. 6. . . .	483 {	Robinson-3.	852	20	347	1,153				
	26	Ohio.	Renchen, No. 5. . . .	495 {	Robinson-1.	905	49	400	1,100				
					Robinson-2.	936	24	436	1,064				
					Robinson-3.	838	5	344	1,156				
					do.	941	26	447	1,053	941			Gas, 935 feet.
					do.	937	38	438	1,062				Salt water, 965 feet.
					do.	950	27	454	1,046	952			60 Gas, 945 feet.
					do.	830		347	1,154				10 Gas, 950 feet. Salt water, 977 feet.
					Robinson-1.	880		396	1,104				Gas, 830 feet.
					Robinson-2.	925		441	1,059			42	Salt water, 964 feet.
					Robinson-3.	827	10	344	1,156				
					do.	905	20	422	1,078				
					do.	909	26	414	1,086			35	

27	Ohio.....	508	Robinson-2	901	1	393	1,107	20	
28	Wabash.....	504	Robinson-3	929	14	421	1,079		
29	Wabash.....	495	Robinson-2	884	56	380	1,120		
30	Wabash.....	487	do	898	39	403	1,097		
31	Pease & Co.....	495	Robinson-3	904	28	417	1,083		
	Shipman, No. 4.....		Robinson-1	835	22	340	1,160		
			Robinson-2	885	10	390	1,110	922	200
32	Pease & Co.....	496	Stray	810	8	314	1,186		
	Shipman, No. 5.....		Robinson-2	880	10	384	1,116	890	913
33	Pease & Co.....	504	Robinson-1	833	12	329	1,171		
	Shipman, No. 3.....		Robinson-2	890	10	386	1,114		
			Robinson-3	915	4	411	1,089	932	600
34	Pease & Co.....	504	Robinson-1	835		331	1,165		
	Shipman, No. 7.....		Robinson-2	890	43	386	1,114		150
35	Pease & Co.....	503	Stray	820		317	1,183		Gravity of oil 31 to 32° Beaume.
			do	817	13	317	1,183		
36	Pease & Co.....	500	Robinson-2	870	42	370	1,130		40
37	Pease & Co.....	499	Robinson-1	827	18	328	1,172		
	Shipman, No. 2.....		Robinson-2	868	22	369	1,131	945	60
38	Pease & Co.....	498	Robinson-1	825	24	327	1,173		
1	Red Bank.....	502	Robinson-2	886	58	388	1,112		150
2	Red Bank.....		do	884	23	382	1,118	892	
	Wampler, No. 2.....		Stray	821		318	1,182		
		503	Robinson-2	887	34	384	1,116	900	75
3	Red Bank.....	492	Robinson-1	820	25	322	1,178		No record
4	Ohio.....	498	Robinson-2	891	27	393	1,107	896	Gas, 825 feet
5	Ohio.....	503	do	890	42	387	1,113		285
6	Ohio.....	505	Robinson-1	825		320	1,180		
	Wampler, No. 4.....		Robinson-2	887	25	382	1,118		100
7	Red Bank.....	505	Robinson-1	826	76	321	1,179		No record
8	Ohio.....	505	Robinson-1	826	25	317	1,183		Gas, 830 feet
9	Ohio.....	503	Robinson-2	890	15	387	1,113	895	150
10	Unknown.....	499							No record
11	Unknown.....	498							do
12	Red Bank.....	505	Stray	807	27	302	1,198		
	Mitchell, No. 1 "B".....		Robinson-2	847	17	342	1,168		75
13	Red Bank.....	507	Robinson-1	838	86	331	1,069	912	75
14	Ohio.....	507	Stray	806	19	299	1,201		
15	Ohio.....	499	do	791	19	292	1,208		25
	Mitchell, No. 3.....		Shallow	671	14	175	1,325		
16	Ohio.....	496	Robinson-2	912	35	416	1,084	920	150
17	Unknown.....	502							No record
18	Unknown.....	504	Robinson-1	808	30	311	1,189		do
	Whitaker, No. 3.....		Robinson-2	900	26	403	1,097		
19	Red Bank.....	497	Shallow	475		+13	1,513		
	Mitchell, No. 2 "B".....		Robinson-2	905	7	417	1,083		
20	Whitaker.....	488	Robinson-3	927	7	439	1,061		
	Doucummen, No. 5.....								

S. F.

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
26— S. E...															
	21	Whitaker.....	Doucunnen, No. 4.....	487	Shallow.....	475	5	+12	411	1,512					
					Robinson-2.....	898	33	434	1,089						
	22	Whitaker.....	Doucunnen, No. 3.....	486	Robinson-3.....	921	20	409	1,066	921					
					Robinson-2.....	895	20	434	1,091						Quit in sand.
	23	Whitaker.....	Doucunnen, No. 2.....	487	Robinson-3.....	895	26	408	1,092	918					
					Robinson-2.....	895	26	431	1,099						Quit in sand.
	24	Whitaker.....	Doucunnen, No. 1.....	486	Robinson-1.....	820	10	334	1,166	920					
					Robinson-3.....	920	20	434	1,066						Quit in sand.
	25	Ohio.....	Fry, No. 1.....	482	Robinson-1.....	818	20	335	1,164						
					Robinson-3.....	896	22	414	1,086						
	26	Ohio.....	Fry, No. 2.....	484	Robinson-1.....	822	14	338	1,162	920					
					Robinson-3.....	914	14	430	1,070						
	27	Ohio.....	Fry, No. 3.....	488	Robinson-1.....	835	27	347	1,153						
					Robinson-3.....	920	12	432	1,068					100	
	28	Ohio.....	Fry, No. 4.....	485	Robinson-1.....	820	12	335	1,165						Gas, 820 feet.
					Robinson-3.....	895	25	410	1,090	900					
	29	Ohio.....	Fry, No. 5.....	481	Robinson-1.....	830	15	349	1,151						Gas, 830 feet.
					Robinson-3.....	899	13	418	1,082	900					
	30	Red Bank.....	Fry, No. 2 "R".....	484	Robinson-1.....	810	30	326	1,174						
					Robinson-2.....	874	16	390	1,110					100	
	31	Red Bank.....	Fry No. 2 "B".....	477	Robinson-1.....	832	30	355	1,115	882					
					Robinson-2.....	882	30	405	1,093					100	
	32	Red Bank.....	Fry, No. 1 "B".....	487	Robinson-1.....	824	24	337	1,163						
					Robinson-2.....	900	24	413	1,087	902				75	
	33	Red Bank.....	Fry, No. 3 "B".....	478	Robinson-1.....	812	13	334	1,166						
					Robinson-2.....	888	38	410	1,090					100	
	34	Red Bank.....	Fry, No. 1 "R".....	479	Robinson-1.....	825	19	346	1,154						Gas, 830 feet.
					Robinson-3.....	901	19	422	1,078	915				100	
	1	Ohio.....	McColpin, No. 16.....	489	Robinson-1.....	835	32	346	1,154						75 Gas, 946 feet.
					Robinson-3.....	943	32	454	1,046	946					120 Gas, 862 feet.
	2	Ohio.....	McColpin, No. 14.....	482	Robinson-2.....	855	39	373	1,127						

3 Ohio.....	McColpin, No. 11	485	do.....	863	378	1,122	870	70
4 Ohio.....	McColpin, No. 10	491	do.....	860	369	1,131	872	100
5 Parker-Edwards.....	Thompson, No. 1	486	Shallow.....	460	+26	1,526		
	Robinson-1		838	352	1,148			
6 Parker-Edwards.....	Thompson, No. 2	484	Shallow.....	839	30	373	1,127	895
	Robinson-2		465	20	+19	1,519		
7 Parker-Edwards.....	Thompson, No. 4	480	Robinson-2	862	378	1,122		
	Stray.....		886	26	402	1,098		
8 Parker-Edwards.....	Thompson, No. 7	481	do.....	805	325	1,175		
9 Parker-Edwards.....	Thompson, No. 8	486	Shallow.....	861	381	1,119	912	
10 Ohio.....	Thompson, No. 1	482	do.....	447	28	+34	1,534	
	Robinson-2		847	24	+37	1,537	476	
11 Ohio.....	Thompson, No. 8	484	Robinson-2	847	18	365	1,135	
	Robinson-3		935	46	453	1,047	25	
12 North Fork.....	Thompson, No. 2	487	Robinson-2	806	31	363	1,137	
	G. Walker, No. 4		806	44	319	1,181		
13 North Fork.....	G. Walker, No. 9	487	Robinson-1	806	40	373	1,127	
	Robinson-2		834		411	1,553		
14 North Fork.....	G. Walker, No. 5	486	Robinson-1	838	411	1,080	898	917
	Robinson-2		848	362	1,138	862		
15 North Fork.....	G. Walker, No. 8	487	Robinson-2	885	24	399	1,101	933
	Robinson-1		834	347	1,153			
16 North Fork.....	G. Walker, No. 10	478	Robinson-2	845	558	1,142		
	do.....		800	17	382	1,118	896	
17 North Fork.....	G. Walker, No. 2	488	Stray.....	815	327	1,173		
	Robinson-2		840	45	352	1,148		
18 North Fork.....	G. Walker, No. 1	482	Shallow.....	430	35	+52	1,552	
	Stray.....		810	12	328	1,172		
19 Ohio.....	McColpin, No. 8	486	Robinson-2	886	19	404	1,096	
	Robinson-3		935	19	453	1,047		
20 Ohio.....	McColpin, No. 12	489	do.....	952	466	1,034		
21 Ohio.....	McColpin, No. 17	487	Robinson-2	863	374	1,126		Gas, 865 feet.
22 Ohio.....	McColpin, No. 18	484	Robinson-1	850	18	363	1,137	150
1 Bruner.....	Hughes, No. 4	482	Robinson-3	941	17	457	1,043	60
	Robinson-2		903	6	421	1,079	943	75
			Robinson-3	940		458	1,042	Gas, 943 feet.
2 Bruner.....	Hughes, No. 1	462	Robinson-2	858	32	396	1,104	Dry
3 Bruner.....	Hughes, No. 5	473	Robinson-1	840	20	367	1,133	Salt water, 980 feet. Gas, 940 feet.
4 Bruner.....	Hughes, No. 2	473	Robinson-2	840	20	367	1,133	
	Robinson-1		900	427	1,073	947	858	
5 Bruner.....	Hughes, No. 10	478	Robinson-3	818	18	345	1,155	
	Robinson-1		932	25	459	1,041	947	962
6 Bruner.....	Hughes, No. 7	481	Robinson-3	830	15	352	1,148	957
7 Bruner.....	Hughes, No. 9	478	Robinson-1	915	50	437	1,063	967
	Robinson-2		822		341	1,159		
8 Bruner.....	Hughes, No. 3	486	Robinson-2	840	39	359	1,141	
Bruner.....	Hughes, No. 6	485	Robinson-3	880	15	402	1,098	840
			Robinson-2	880	15	402	1,098	882
			Robinson-3	932	5	454	1,046	963
			Stray.....	812	10	326	1,174	
			Robinson-2	850	36	364	1,136	880
			Robinson-1	831	50	346	1,154	853
								885

N. W.:

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
27— N. W.					{							
	10	Bruner.....	Hughes, No. 8.....	482	{	Stray.....	822	6	340	1,160		
						Robinson-1.....	834	20	352	1,148		
						Robinson-2.....	870	15	388	1,112		
						Shallow.....	432	5	+46	1,546	Good	
						do.....	458	15	+20	1,520		
						Robinson-3.....	975	50	497	1,003		
						do.....	958	42	482	1,018		
						Shallow.....	567		90	1,410	Dry	
						Robinson-4.....	885	60	525	975		
						Robinson-3.....	965	40	492	1,008		
						do.....	946	60	473	1,027		
						do.....	945	65	476	1,024		
						do.....	974	6	499	1,001	10	Gas, 975 feet. Salt water, 999 feet.
	20	Ohio.....	Tohill, No. 7.....	473	{	Robinson-2.....	910	10	437	1,063		
						Robinson-3.....	942	23	469	1,081		
	21	Ohio.....	Tohill, No. 5.....	474	{	Robinson-1.....	849	27	375	1,125		
						Robinson-2.....	894	11	420	1,080		
	22	Ohio.....	Tohill, No. 11.....	479	{	do.....	900	20	421	1,079	150	Gas, 901 feet.
	1	Ohio.....	C. Dennis, No. 1.....	462	{	do.....	874		412	1,088	300	Gas, 874 feet.
	2	Ohio.....	C. Dennis, No. 12.....	472	{	Stray.....	816		344	1,156		
	3	Ohio.....	C. Dennis, No. 3.....	477	{	Robinson-2.....	880		408	1,092	200	Gas, 880 feet.
	4	Ohio.....	C. Dennis, No. 8.....	477	{	do.....	880	32	403	1,097	75	Gas, 865 feet.
	5	Ohio.....	C. Dennis, No. 11.....	472	{	Robinson-1.....	852		375	1,125	100	
						do.....	840		368	1,132	50	Gas, 840 feet.
	6	Ohio.....	C. Dennis, No. 14.....	479	{	do.....	850	26	371	1,129		
						Robinson-2.....	881	25	402	1,098	200	Gas, 864 feet.
	7	Ohio.....	C. Dennis, No. 17.....	470	{	Robinson-1.....	863	37	393	1,107	300	Gas, 864 feet.
	8	Ohio.....	C. Dennis, No. 9.....	479	{	do.....	851		372	1,128	400	Gas, 851 feet.
	9	Ohio.....	C. Dennis, No. 22.....	471	{	Shallow.....	447	27	+24	1,524	100	Gas, 450 feet. Salt water, 474 feet.
	10	Ohio.....	C. Dennis, No. 6.....	470	{	Robinson-2.....	871	37	401	1,099	500	Gas, 873 feet.

S. W.

11 Ohio.....	C. Dennis, No. 18.....	472	Shallow.....	447	29	+25	1,525	455	100 Gas, 450 feet.
12 Ohio.....	C. Dennis, No. 2.....	467	Robinson-2.....	882	415	1,085	898	75 Gas, 898 feet.	
13 Ohio.....	C. Dennis, No. 5.....	472	Robinson-1.....	855	25	383	1,117	300 Gas, 895 feet.	
14 Ohio.....	C. Dennis, No. 20.....	476	Robinson-2.....	895	20	423	1,077	No record.	
15 Ohio.....	C. Dennis, No. 19.....	468	Robinson-2.....	897	38	429	1,071	150 Gas, 898 feet.	
16 Ohio.....	C. Dennis, No. 4.....	461	do.....	874	5	413	1,087	70 Gas, 908 feet.	
17 Ohio.....	C. Dennis, No. 7.....	462	Robinson-3.....	906	21	445	1,055	150 Gas, 905 feet.	
18 Ohio.....	J. Dennis, No. 1.....	469	do.....	903	20	441	1,059	200 Gas, 910 feet.	
19 Ohio.....	J. Dennis, No. 14.....	464	Robinson-2.....	870	38	429	1,099	200 Gas, 894 feet.	
20 Ohio.....	J. Dennis, No. 3.....	466	do.....	893	38	429	1,071	300 Gas, 919 feet.	
21 Ohio.....	J. Dennis, No. 15.....	476	Robinson-3.....	918	32	452	1,048	100 Gas, 912 feet.	
22 Ohio.....	J. Dennis, No. 2.....	474	Robinson-2.....	900	32	424	1,076	100 Gas, 884 feet.	
23 Ohio.....	J. Dennis, No. 4.....	479	do.....	883	9	409	1,091	300 Gas, 918 feet.	
24 Ohio.....	J. Dennis, No. 5.....	470	Robinson-3.....	915	21	441	1,059	400 Gas, 918 feet.	
25 Wark.....	J. Dennis, No. 3.....	466	Robinson-2.....	880	8	438	1,062	600 Gas, 881 feet.	
26 Wark.....	J. Dennis, No. 17.....	466	Robinson-1.....	840	15	374	1,126	600	
27 Wark.....	J. Dennis, No. 1.....	470	Robinson-2.....	875	40	409	1,091	600	
28 Wark.....	J. Dennis, No. 16.....	473	Shallow.....	855	18	+11	1,511	931	
29 Wark.....	J. Dennis, No. 2.....	475	Robinson-1.....	835	24	365	1,135	600	
30 Wark.....	J. Dennis, No. 14.....	474	Robinson-2.....	877	43	407	1,093	100 Gas, 836 feet.	
31 Wark.....	J. Dennis, No. 18.....	476	Shallow.....	460	17	+13	1,513	500	
32 Wark.....	J. Dennis, No. 4.....	478	Robinson-1.....	836	20	361	1,139	300	
33 Wark.....	J. Dennis, No. 9.....	476	Robinson-2.....	877	42	402	1,098	300	
1 North Fork.....	Newlin, No. 10.....	486	Robinson-1.....	826	122	352	1,148	1,500	
2 North Fork.....	Newlin, No. 8.....	487	Robinson-2.....	842	23	+34	1,534	400	
3 North Fork.....	Newlin, No. 12.....	491	Robinson-1.....	831	19	353	1,147	950	
4 North Fork.....	Newlin, No. 5.....	484	Robinson-2.....	865	45	387	1,113	942	
5 North Fork.....	Newlin, No. 11.....	489	Shallow.....	600	83	124	1,376	970	
6 North Fork.....	Newlin, No. 1.....	492	Robinson-1.....	824	37	348	1,152	950	
7 North Fork.....	G. Walker, No. 3.....	487	Robinson-3.....	908	37	432	1,068	1,000	
8 North Fork.....	G. Walker, No. 6.....	486	Robinson-2.....	847	61	361	1,139	943	
9 Ohio.....	C. Dennis, No. 13.....	484	Robinson-3.....	914	52	428	1,072	875	
			Robinson-1.....	867	13	385	1,065	884	
			Robinson-2.....	922	13	435	1,065	942	
			Robinson-3.....	876	6	385	1,115	970	
			Robinson-1.....	895	23	404	1,096	950	
			Robinson-2.....	928	32	437	1,063	950	
			Robinson-3.....	873	70	389	1,111	950	
			Shallow.....	855	26	366	1,134	950	
			Robinson-1.....	879	390	1,110	1,110	943	
			Robinson-2.....	918	21	429	1,071	943	
			Robinson-3.....	460	20	+32	1,532	943	
			Shallow.....	882	370	1,130	1,130	943	
			Robinson-1.....	881	389	1,111	1,111	943	
			Robinson-2.....	823	336	1,164	1,164	943	
			Robinson-3.....	870	383	1,117	1,117	943	
			Shallow.....	840	12	354	1,146	943	
			Robinson-1.....	854	19	368	1,132	943	
			Robinson-2.....	886	39	400	1,100	943	
			do.....	893	27	379	1,121	875	

S. E....

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
27—S. E. . .	10 Ohio		C. Dennis, No. 15	480	Robinson-2	862	26	352	1,118	866	200	Gas, 865 feet.
	11 Ohio		C. Dennis, No. 21	485	do	873	32	388	1,112	875	150	Gas, 874 feet.
	12 Ohio		C. Dennis, No. 16	478	do	855	34	377	1,123	860	200	Gas, 860 feet.
	13 Ohio		C. Dennis, No. 10	486	do	890		404	1,096	895	50	Gas, 891 feet.
	14 North Fork		G. Walker, No. 11	487	Robinson-1	833	9	366	1,131			
	15 North Fork		G. Walker, No. 7	489	Robinson-2	884	44	397	1,103			
	16 North Fork		C. Walker, No. 2	487	Robinson-3	872	26	383	1,117			
	17 North Fork		C. Walker, No. 1	489	Stray	920	30	431	1,069			
	18 North Fork		C. Walker, No. 5	495	Robinson-1	810		323	1,177			
	19 North Fork		C. Walker, No. 3	500	Robinson-2	857	26	370	1,130			
	20 North Fork		C. Walker, No. 6	493	Robinson-2	894		407	1,093	917		
	21 North Fork		C. Walker, No. 4	489	Robinson-1	897	10	378	1,122			
	22 North Fork		Hicks, No. 1	491	Robinson-2	885	10	396	1,104			
	23 North Fork		Hicks, No. 14	493	Robinson-3	912	26	423	1,077	931		
	24 North Fork		Hicks, No. 7	496	Robinson-1	872	85	377	1,123			
					do	876	6	376	1,124			Salt water, 912 feet.
					Robinson-2	895		395	1,105			
					Robinson-3	913	24	413	1,087			
					Robinson-2	897	10	404	1,096			
					Robinson-2 (?)	921	11	428	1,072			
					Robinson-3	955	11	462	1,038	972		
					Robinson-1	840	37	351	1,149	865		
					Robinson-2	897	14	408	1,092	897		
					Robinson-3	926	33	417	1,053			
					Robinson-2	875	15	384	1,106			
					Robinson-3	909		418	1,082	931		
					Stray	922	12	429	1,071			
					Robinson-1	946	35	453	1,047			
					Robinson-3	870	25	374	1,126			
					Robinson-2	900	45	404	1,096	950		

25	North Fork.....	Hicks, No. 8.....	495	{ Stray..... Robinson-1.....	839 872	16	344 1, 156 377 1, 123	842 878		Gas, 896 feet. Salt water, 906 feet.
26	North Fork.....	Hicks, No. 9.....	498	{ Stray..... Robinson-1..... Robinson-2..... Robinson-3..... Stray.....	845 877 890 920 850	27 10 21 20 20	347 1, 153 379 1, 121 401 1, 108 422 1, 078 355 1, 145			Salt water.
27	North Fork.....	Hicks, No. 10.....	495	{ Robinson-1..... Robinson-2..... Robinson-3..... Robinson-1..... Robinson-2..... Robinson-3.....	883 911 928 865 880 920	23 12 27 8 7 20	388 1, 112 416 1, 084 433 1, 067 372 1, 128 387 1, 113 427 1, 073			
28	North Fork.....	Hicks, No. 13.....	493	{ Robinson-1..... Robinson-2..... Robinson-3.....	857 913 885	22 12 37	383 1, 117 439 1, 061 420 1, 080		200 20	
1	Mahutska.....	Carleton, No. 7.....	474	{ Robinson-1..... Robinson-2.....	885 844	11	388 1, 112		200	
2	Mahutska.....	Carleton, No. 4.....	456	{ Robinson-1..... Robinson-2.....	875 865	27 38	419 1, 081 392 1, 108			
3	Mahutska.....	Carleton, No. 5.....	473	{ Robinson-1..... Robinson-2..... Shallow.....	906 435 918	34 11 27	433 1, 067 423 1, 523 400 1, 040		100 150	
4	Mahutska.....	Carleton, No. 6.....	458	{ Robinson-3..... Robinson-1.....	867 868	97 6	403 1, 095 406 1, 094		Show	Sand, broken
5	Mahutska.....	Carleton, No. 2.....	462	{ do..... Robinson-2.....	895 918	11 14	433 1, 067 456 1, 044		250	
6	Mahutska.....	Carleton, No. 3.....	462	{ Robinson-1..... Robinson-2.....	873 890	6 60	411 1, 089 428 1, 072			
7	Mahutska.....	Carleton, No. 8.....	462	{ Robinson-1..... Robinson-2.....	861 886	8 60	387 1, 113 412 1, 088			
8	Mahutska.....	Carleton, No. 9.....	474	{ Robinson-1..... Robinson-2.....	851 908	12 22	388 1, 112 445 1, 055		970	Dry
9	Mahutska.....	Carleton, No. 10.....	463	{ Robinson-3..... Robinson-1.....	887 872	25 25	418 1, 082 398 1, 102			
10	Mahutska.....	Stewart, No. 5.....	469	{ Robinson-1..... Robinson-3.....	920 943	10 7	446 1, 054 469 1, 031		960	Dry
11	Homestead.....	Stewart, No. 6.....	474	{ Robinson-4..... Robinson-1.....	893 933	22 22	416 1, 084 456 1, 044			
12	Homestead.....	Stewart, No. 7.....	477	{ Robinson-2..... Robinson-3.....	932 903	12 12	505 995 440 1, 060		951	Dry
13	Homestead.....	Stewart, No. 1.....	463	{ do..... Stray.....	827 847		365 1, 135 385 1, 115			Salt water, 976 feet. Well abandoned.
14	C. K. Brown.....	To ill, No. 1.....	462	{ Robinson-1..... Robinson-3.....	847 947	18 15	435 1, 015 409 1, 091		962	Quit in sand.
1	Ohio.....	Bailey, No. 3.....	461	{ Robinson-1..... Robinson-3.....	870 935	23 24	409 1, 091 474 1, 026		875 935	
2	Ohio.....	Bailey, No. 1.....	467	{ do..... Robinson-1.....	938 895	5	471 1, 029 427 1, 073		940	100 Gas, 938 feet.
3	Ohio.....	Bailey, No. 5.....	468	{ Robinson-1..... Robinson-2.....	917 917	11	449 1, 051		920	5 Gas, 918 feet.

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
23— N. W.	4	Ohio.....	Bailey, No. 2.....	468	Stray.....	857	10	389	1,111	.....	.....	Salt water, 892 feet.
	5	Ohio.....	Bailey, No. 4.....	466	Robinson-2.....	892	15	424	1,076	907	.....	Gas, 905 feet.
	6	Ohio.....	Bailey, No. 7.....	466	Robinson-3.....	905	5	439	1,061	905	50	70 Gas, 879 feet.
	7	Ohio.....	Bailey, No. 6.....	458	Robinson-1.....	877	26	411	1,089	880	15	Gas, 862 feet.
	8	Ohio.....	Bailey, No. 8.....	471	do.....	862	.....	404	1,066	864	3	Gas, 972 feet.
	9	McArthur.....	Bailey, No. 1.....	465	Robinson-3.....	972	30	501	999	973	Dry	1002 feet.
	10	Ohio.....	McColpin, No. 1.....	472	Stray.....	845	6	380	1,120	915	Dry	Salt water.
	1	Homestead.....	Stewart, No. 4.....	476	Robinson-1.....	894	.....	522	978	994	Dry	Salt water, 1039 feet.
	2	Homestead.....	Stewart, No. 1.....	466	Robinson-3.....	895	21	419	1,081	1,039	Dry	Quit in sand.
	3	Homestead.....	Stewart, No. 2.....	470	Robinson-2.....	900	13	531	969	968	.....	Salt water, 951 feet.
S. E.	4	Homestead.....	Stewart, No. 3.....	476	Robinson-3.....	939	29	473	1,027	956	Show	Quit in sand.
	5	Bruner.....	Tohill, No. 8.....	473	do.....	927	29	457	1,043	938	.....	Quit in sand.
	6	Bruner.....	Tohill, No. 7.....	470	Robinson-1.....	883	23	407	1,093	.....	.....	Quit in sand.
	7	Bruner.....	Tohill, No. 6.....	475	Robinson-3.....	926	18	450	1,050	944	.....	Quit in sand.
	8	Bruner.....	Tohill, No. 5.....	476	Robinson-2.....	912	35	439	1,061	951	.....	Quit in sand.
	9	Bruner.....	Tohill, No. 4.....	472	Robinson-1.....	862	20	392	1,108	926	.....	Quit in sand.
	10	Bruner.....	Tohill, No. 3.....	471	Robinson-2.....	898	13	428	1,072	898	.....	Quit in sand.
	11	Bruner.....	Tohill, No. 2.....	473	Robinson-3.....	877	13	402	1,098	877	.....	Quit in sand.
					Robinson-1.....	916	15	441	1,059	935	.....	Quit in sand.
					Robinson-2.....	893	15	417	1,083	933	.....	Salt water, 946 feet.
					Robinson-3.....	933	.....	457	1,043	935	.....	Quit in sand.
					Robinson-1.....	856	10	384	1,116	384	.....	Quit in sand.
					Robinson-2.....	895	20	409	1,091	933	.....	Quit in sand.
					Robinson-3.....	918	25	447	1,053	923	.....	Quit in sand.
					Robinson-1.....	882	25	409	1,091	887	.....	Quit in sand.
					Robinson-2.....	926	17	453	1,047	926	.....	Quit in sand.

12 Bruner.....	471	Shallow.....	483	28	12	1,488	493	.....
13 Bruner.....	475	Robinson-2.....	881	17	410	1,090	.....	.....
14 Bruner.....	477	Robinson-3.....	918	23	447	1,053	920	.....
15 Bruner.....	473	Robinson-2.....	886	20	411	1,089	891	.....
16 Bruner.....	473	Robinson-3.....	934	21	459	1,041	.....	.....
17 Bruner.....	474	Robinson-2.....	885	17	408	1,092	887	.....
18 Bruner.....	476	Robinson-3.....	923	39	446	1,054	935	Salt water, 950 feet.
1 Bruner.....	482	Robinson-2.....	909	24	436	1,064	910	.....
2 Bruner.....	478	Robinson-3.....	911	20	438	1,062	.....	.....
3 Bruner.....	485	Robinson-2.....	969	12	496	1,004	.....	Salt water, 969 feet.
4 Bruner.....	487	Robinson-3.....	901	23	427	1,073	905	.....
5 Treat, Crawford & Treat.	486	Robinson-2.....	942	17	468	1,032	944	Quit in sand
6 Treat, Crawford & Treat.	480	Robinson-3.....	963	20	432	1,068	908	.....
1 McArthur.....	477	Robinson-2.....	965	.....	489	1,011	968	.....
1 North Fork.....	500	Robinson-3.....	887	27	405	1,095	887	960
2 North Fork.....	491	Robinson-2.....	916	15	438	1,062	918	.....
3 North Fork.....	504	Robinson-3.....	887	27	402	1,098	890	.....
4 North Fork.....	505	Robinson-2.....	901	21	414	1,086	901	928
5 North Fork.....	494	Robinson-3.....	913	17	429	1,071	918	3
6 North Fork.....	501	Robinson-2.....	936	26	436	1,044	.....	Dry
7 North Fork.....	509	Robinson-3.....	955	17	478	1,022	972	Dry
8 North Fork.....	504	Robinson-2.....	947	8	447	1,053	.....	Salt water, 972 feet.
9 North Fork.....	505	Robinson-3.....	957	39	457	1,043	.....	.....
10 North Fork.....	494	Robinson-1.....	876	5	385	1,115	.....	.....
11 North Fork.....	501	Robinson-2.....	893	11	402	1,098	917	.....
12 North Fork.....	505	Robinson-3.....	914	31	423	1,077	.....	.....
13 North Fork.....	504	Robinson-2.....	932	8	428	1,072	.....	.....
14 North Fork.....	505	Robinson-3.....	960	19	456	1,044	984	.....
15 North Fork.....	494	Robinson-2.....	848	14	343	1,157	.....	.....
16 North Fork.....	501	Robinson-3.....	900	19	395	1,105	.....	.....
17 North Fork.....	505	Robinson-2.....	988	5	483	1,017	993	Salt water.
18 North Fork.....	504	Robinson-3.....	857	15	363	1,137	.....	.....
19 North Fork.....	505	Robinson-2.....	886	6	392	1,108	.....	.....
20 North Fork.....	509	Robinson-3.....	911	19	417	1,083	.....	.....
21 North Fork.....	504	Robinson-2.....	887	15	386	1,114	834	.....
22 North Fork.....	505	Robinson-3.....	916	20	415	1,085	.....	.....
23 North Fork.....	509	Robinson-2.....	942	.....	441	1,059	960	.....
24 North Fork.....	504	Robinson-3.....	907	.....	402	1,098	917	957
25 North Fork.....	505	Robinson-2.....	889	10	380	1,120	.....	.....
26 North Fork.....	509	Robinson-3.....	911	21	402	1,098	917	989
27 North Fork.....	504	Robinson-2.....	917	27	412	1,088	.....	No record
28 North Fork.....	505	Robinson-3.....	.....	.....	.....	.....	.....	No record
29 North Fork.....	509	Robinson-2.....	.....	.....	.....	.....	.....	.do.
30 North Fork.....	504	Robinson-3.....	.....	.....	.....	.....	.....	.do.
31 North Fork.....	505	Robinson-2.....	865	7	371	1,129	.....	.....
32 North Fork.....	509	Robinson-3.....	885	10	391	1,109	.....	.....
33 North Fork.....	504	Robinson-2.....	909	30	415	1,085	.....	.....

33— N. E...

N. W... 34—

N. E...

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
34— N. E. . .	14	Stephens, Hawkins & Steele.	Waggoner, No. 2.	496	Robinson-1.....	867	7	371	1,129	.....	.....	.....	.....
	16	Craig & Lowrie.	Anderson, No. 1.	495	Robinson-2.....	887	6	391	1,109	.....	.....	.....	.....
	17	Stephens, Hawkins & Steele.	Waggoner, No. 3.	493	Robinson-3.....	919	24	423	1,077	.....	.....	.....	No record.
	18	Stephens, Hawkins & Steele.	Padgett, No. 6.	493	Robinson-1.....	864	13	371	1,129	.....	.....	.....	No record.
	19	Stephens, Hawkins & Steele.	Padgett, No. 5.	497	Robinson-2.....	886	14	393	1,107	.....	.....	.....	No record.
	20	Porter.	Church Lot, No. 1.	503	Robinson-3.....	907	31	414	1,086	.....	.....	.....	No record.
	21	Parker-Edwards.	Hardin, No. 4.	500	Robinson-4.....	942	13	449	1,051	.....	958	.....	No record.
	22	Parker Edwards.	Hardin, No. 3.	494	Robinson-1.....	878	14	378	1,122	.....	.....	.....	do.
	23	Parker-Edwards.	Hardin, No. 2.	490	Robinson-2.....	907	17	407	1,093	.....	.....	.....	do.
	24	Stephens, Hawkins & Steele.	Padgett, No. 4.	493	Robinson-3.....	928	41	428	1,072	.....	969	.....	.....
	25	Stephens, Hawkins & Steele.	Padgett, No. 2.	492	Robinson-1.....	876	20	382	1,118	.....	.....	.....	.....
	26	Stephens, Hawkins & Steele.	Padgett, No. 1.	495	Robinson-2.....	906	14	402	1,069	.....	.....	.....	.....
27	27	Stephens, Hawkins & Steele.	Padgett, No. 3.	495	Robinson-3.....	925	26	431	1,069	.....	951	.....	.....
	27	Stephens, Hawkins & Steele.	Padgett, No. 3.	495	Robinson-1.....	859	11	369	1,131	.....	.....	.....	.....
	27	Stephens, Hawkins & Steele.	Padgett, No. 3.	495	Robinson-2.....	881	46	391	1,109	.....	942	.....	No record.
	27	Stephens, Hawkins & Steele.	Padgett, No. 3.	495	Robinson-2.....	881	46	391	1,109	.....	942	.....	No record.
28	28	Parker-Edwards.	Hardin, No. 1.	496	Robinson-1.....	862	14	366	1,134	.....	.....	.....	do.
	28	Parker-Edwards.	Hardin, No. 1.	496	Robinson-2.....	890	14	394	1,106	.....	.....	.....	do.
	28	Parker-Edwards.	Hardin, No. 1.	496	Robinson-3.....	914	16	418	1,082	.....	.....	.....	do.
	28	Parker-Edwards.	Hardin, No. 1.	496	Robinson-3.....	914	16	418	1,082	.....	.....	.....	do.

29 North Fork	494	Newlin, No. 4	878	44	384	1,116	901	937		
30 North Fork	495	Newlin, No. 2	865	13	370	1,130	887			
31 North Fork	493	Newlin, No. 9	897	25	434	1,096				
32 North Fork	493	Newlin, No. 7	872	40	379	1,121	887	941		
33 North Fork	491	Newlin, No. 3	880	35	389	1,111				
34 North Fork	490	Newlin, No. 6	924	25	433	1,067				
35 Kelly	491	Town Lot, No. 1	875	25	385	1,115	885			No record.
36 Kelly	490	Town Lot, No. 2	914	30	424	1,076	921			do.
37 Homestead	490	Martin, No. 1								
38 Homestead	492	Martin, No. 4								Quit in sand
39 Homestead	495	Martin, No. 3								Quit in sand
40 Homestead	493	Martin, No. 2								
1 Wark	485	J. Dennis, No. 12	880	11	366	1,134				
2 Wark	480	J. Dennis, No. 15	830	117	350	1,150	947	3,000		Quit in sand
3 Wark	479	J. Dennis, No. 7	885	15	356	1,144				
4 Wark	485	J. Dennis, No. 11	876	38	397	1,103		600		
5 Wark	486	J. Dennis, No. 13	846	24	361	1,139				Quit in sand
6 Wark	489	J. Dennis, No. 10	844	100	358	1,142		250		
7 Wark	490	J. Dennis, No. 5	885	10	365	1,135				Quit in sand
8 Wark	486	J. Dennis, No. 6	902	16	412	1,088		250		
9 Wark	482	J. Dennis, No. 8	857	8	371	1,129				
10 Ohio	482	J. Dennis, No. 9	857	18	375	1,102		500		
11 Ohio	485	J. Dennis, No. 10	916	23	334	1,066		600		
12 Ohio	480	J. Dennis, No. 7	922		440	1,060	925			Gas, 925 feet.
13 Ohio	479	J. Dennis, No. 16	904	23	419	1,081	910			Gas, 905 feet.
14 Ohio	480	J. Dennis, No. 6	903		423	1,077	903			Gas, 903 feet.
15 Ohio	484	J. Dennis, No. 8	920		440	1,060	925			No record.
16 Ohio	487	J. Dennis, No. 13	918		434	1,066	920			Gas, 925 feet.
17 Ohio	486	J. Dennis, No. 12	910	22	417	1,083	906			Gas, 918 feet.
18 Ohio	487	J. Dennis, No. 11	938	19	451	1,049	950			Gas, 905 feet.
19 Pure	486	Price, No. 8	876	5	390	1,110				Gas, 940 feet.
20 Pure	485	Price, No. 7	890	36	404	1,066				
21 Pure	482	Price, No. 6	887	18	405	1,095				
			918	40	426	1,064		200		

[illegible]

S. F.

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
34—S. E...	28	Parker-Crowly	Barnett, No. 6	486	Robinson-3	940	25	454	1,046			No record.
35—N. E...	1	Red Bank	C. Doucumen, No. 1	486	Robinson-1	810		323	1,177		100	
	2	Red ank	C. Doucumen, No. 2	487	Robinson-3	929		442	1,058	929		
	3	Red Bank	C. Doucumen, No. 3	493	Robinson-4	940	32	433	1,047	940		
	4	Ohio	C. Doucumen, No. 1	470	Robinson-2	917	41	424	1,076		40	
					Shallow	419	9	+51	1,551			
					do	456	10	+14	1,514			
	5	Ohio	C. Doucumen, No. 4	479	Robinson-1	815		345	1,155	962		Gas 3,000,000 cubic feet of gas.
	1	Ohio	Shipman, No. 3	485	do	825		340	1,160	818		Gas 800 feet.
	2	Ohio	Shipman, No. 2	479	Robinson-2	938		453	1,047	940		80 Salt water, 987 feet
	3	Ohio	Shipman, No. 5	495	Robinson-1	812	140	333	1,167			Gas 820 feet
	4	Ohio	Shipman, No. 4	499	Robinson-3	939	25	444	1,056	940		40 Gas, 945 feet.
	5	Ohio	Shipman, No. 1	503	Robinson-1	958		350	1,150			
	6	Ohio	Shipman, No. 6	507	Robinson-3	948		459	1,041	960		75 Gas, 958 feet.
	7	Ohio	Shipman, No. 7	507	Robinson-2	910	112	345	1,155	830		20 Salt water, 1,068 feet.
					Stray	896		389	1,111			Gas, 896 feet.
					Robinson-3	973		349	1,032	975		Salt water, 987 feet.
					Robinson-1	852	5	401	1,099		8	
					Robinson-2	904	6			940	12	No record.
					Robinson-1	802	30	328	1,172		Dry Gas	Gas, 802 feet.
	1	Watkins	Shipman, No. 1	480	Robinson-3	877		405	1,095			
	2	Red Bank	A. Shipman, No. 1	474	Robinson-1	781	13	310	1,190			
	3	Finley	Marshall, No. 4	472	Robinson-1	847		376	1,124			
	4	Finley	Marshall, No. 1	471	Robinson-2	895		424	1,076			
					Robinson-3	845	23	375	1,125			
	5	Finley	Marshall, No. 3	470	Robinson-2	898	15	428	1,072			

[illegible]

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36— N. E...	20	Ohio.....	Adams, No. 6.....	452	Robinson-1.....	803	27	351	1,149	805	.....	15 Gas, 805 feet	
	21	Ohio.....	Adams, No. 8.....	453	do.....	802	26	349	1,151	805	.....	45 Gas, 803 feet.	
	22	Ohio.....	Adams, No. 2.....	467	do.....	808	37	341	1,159	815	.....	200 Gas, 815 feet.	
	23	Ohio.....	Adams, No. 7.....	462	do.....	790	32	328	1,172	808	.....	40 Gas, 796 feet.	
	1	American Oil & Develop- ment Co.....	Richart, No. 5.....	464	do.....	814	31	350	1,150	833	.....	
N. W...	2	American Oil & Develop- ment Co.....	Richart, No. 4.....	475	do.....	824	41	349	1,151	.....	.....	100	
	3	American Oil & Develop- ment Co.....	Richart, No. 3.....	467	Robinson-2.....	863	32	396	1,104	.....	.....
	4	American Oil & Develop- ment Co.....	Richart, No. 6.....	461	Shallow.....	640	14	179	1,321	926	943	50	
	5	American Oil & Develop- ment Co.....	Richart, No. 8.....	464	Robinson-1.....	792	24	331	1,169	811	.....	
	6	American Oil & Develop- ment Co.....	Richart, No. 26.....	455	Robinson-2.....	850	30	389	1,111	876	.....	
	7	American Oil & Develop- ment Co.....	Richart, No. 15.....	468	Stray.....	767	56	303	1,197	.....	.....	100	
	8	Red Bank.....	Mitchell, No. 1.....	468	Robinson-1.....	787	32	332	1,168	792	.....	
	9	Red Bank.....	Mitchell, No. 2.....	465	Robinson-2.....	829	5	374	1,126	.....	.....
	10	Ohio.....	Mitchell, No. 3.....	480	Robinson-3.....	850	42	395	1,105	897	.....	
	11	Ohio.....	Mitchell, No. 2.....	456	do.....	791	19	335	1,165	.....	.....	25	No record.
	12	Ohio.....	Mitchell, No. 1.....	475	do.....	806	19	331	1,169	.....	818		
	13	Ohio.....	Adams, No. 5.....	475	do.....	825	10	350	1,150	830	975		
	14	Ohio.....	Adams, No. 1.....	454	do.....	804	10	350	1,150	.....	.....	60 Gas, 827 feet.	
	15	Wabash.....	Doucemen, No. 1.....	456	Robinson-1.....	775	16	319	1,181	791	.....	80 Gas, 806 feet.	
	16	Ohio.....	Doucemen, No. 6.....	464	Robinson-3.....	912	32	456	1,044	.....	.....
					Robinson-2.....	854	12	390	1,110	.....	.....		Gas, 860 feet.
					Robinson-3.....	906	19	442	1,058	910	.....	5	

17 Ohio.....	Doneummen, No. 5.....	452	do.....	Robinson-1.....	886	434	1,066	823	40	
18 Ohio.....	Doneummen, No. 3.....	479	do.....	do.....	809	330	1,170			
19 Morrison.....	Doneummen, No. 7.....	468	Stray.....	Robinson-1.....	791	323	1,177		30	
20 Morrison.....	Doneummen, No. 2.....	462	Robinson-1.....	Robinson-2.....	809	341	1,159			
			Robinson-2.....	Robinson-3.....	788	326	1,174		100	
1 Ohio.....	Sparks, No. 1.....	466	Robinson-3.....	Robinson-2.....	867	5	401	1,099		Gas, 867 feet.
2 Red Bank.....	Maxwell, No. 3.....	451	Robinson-2.....	Robinson-3.....	903	10	437	1,063	22	Salt water, 927 feet.
3 Ohio.....	Maxwell, No. 6.....	447	Robinson-3.....	Robinson-1.....	830	15	461	1,039		Gas
4 Ohio.....	Maxwell, No. 7.....	448	do.....	Robinson-3.....	772	3	324	1,176	42	
			Robinson-1.....	Robinson-3.....	891	11	443	1,057		Salt water, 902 feet.
5 Hazelwood.....	Pope, No. 3.....	442	Robinson-3.....	Robinson-1.....	775	8	333	1,167		
6 Hazelwood.....	Pope, No. 16.....	446	Robinson-1.....	Robinson-1.....	888	12	446	1,054		Salt water, 902 feet.
7 Hazelwood.....	Pope, No. 2.....	444	do.....	Robinson-2.....	770	32	324	1,171		Dry
8 Hazelwood.....	Pope, No. 18.....	441	Shallow.....	Robinson-1.....	773	27	320	1,171		
9 Hazelwood.....	Pope, No. 1.....	441	Robinson-1.....	Robinson-1.....	850	27	406	1,094	8	
			Robinson-2.....	Robinson-2.....	385	33	456	1,556		Salt water, 902 feet.
10 Hazelwood.....	Pope, No. 6.....	443	Robinson-2.....	Robinson-2.....	782	23	326	1,174		
1 Leeper Bros.....	Sparks, No. 4.....	400	Robinson-1.....	Robinson-2.....	787	38	341	1,139		
2 Leeper Bros.....	Sparks, No. 1.....	454	Robinson-2.....	Robinson-2.....	857	13	416	1,084		
3 Leeper Bros.....	Sparks, No. 13.....	459	Shallow.....	Robinson-1.....	775	28	332	1,108		872
4 Leeper Bros.....	Sparks, No. 17.....	467	do.....	Robinson-1.....	846	15	403	1,097		882
5 Leeper Bros.....	Sparks, No. 15.....	467	do.....	Robinson-2.....	792	38	332	1,168		877
6 Leeper Bros.....	Sparks, No. 14.....	465	do.....	Robinson-1.....	390	45	+64	1,564		468
7 Leeper Bros.....	Sparks, No. 12.....	466	do.....	Robinson-2.....	799	32	340	1,150		909
8 Leeper Bros.....	Sparks, No. 16.....	465	do.....	Robinson-2.....	815	23	348	1,152		899
9 Leeper Bros.....	Sparks, No. 9.....	463	do.....	Robinson-1.....	810	20	343	1,157		
10 Leeper Bros.....	Sparks, No. 10.....	461	do.....	Robinson-2.....	851	3	384	1,116		Quit in sand.
11 Leeper Bros.....	Sparks, No. 18.....	470	do.....	Robinson-1.....	808	22	343	1,157		852
12 Leeper Bros.....	Sparks, No. 8.....	453	do.....	Robinson-2.....	824	26	358	1,142		910
13 Leeper Bros.....	Sparks, No. 6.....	450	do.....	Robinson-1.....	823	15	358	1,142		
14 Leeper Bros.....	Sparks, No. 5.....	448	do.....	Robinson-2.....	851	14	386	1,114		
15 Leeper Bros.....	Sparks, No. 19.....	462	do.....	Robinson-1.....	826	20	363	1,137		
16 Ohio.....	Maxwell, No. 5.....	445	do.....	Robinson-1.....	804	32	343	1,157		Good
			do.....	Robinson-1.....	817	22	347	1,153		Gas, 815 feet.
			do.....	Robinson-1.....	789	23	336	1,164		
17 Wabash.....	Maxwell, No. 1.....	452	Robinson-1.....	Robinson-1.....	772	22	324	1,176		No record
18 American Oil & Development Co.....	Richart, No. 27.....	452	do.....	Robinson-1.....	805	20	343	1,157		890
19 American Oil & Development Co.....	Richart, No. 14.....	452	do.....	Robinson-3.....	772	27	327	1,173		872
20 American Oil & Development Co.....	Richart, No. 16.....	450	do.....	Robinson-3.....	790	6	338	1,162	25	
			do.....	Robinson-3.....	890	25	438	1,062		Salt water, 918 feet.
			do.....	Robinson-3.....	881	30	336	1,161		
			do.....	Robinson-3.....	787	34	335	1,165		Quit in sand.
			do.....	Robinson-3.....	795	20	345	1,155		

Crawford County—Martin Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
36—S. E. . .	21	American Oil & Development Co.	Richart, No. 17.	445	Robinson-1	808	8	363	1,137	808	35	-----
	21	-----	-----	-----	Robinson-2	818	11	373	1,127	-----	-----	-----
	22	Riddle	Mann, No. 5	450	Robinson-3	831	-----	386	1,014	-----	-----	Salt water, 931 feet
	23	Riddle	Mann, No. 6	455	Robinson-1	803	18	353	1,147	807	50	-----
	24	Riddle	Mann, No. 7	455	Robinson-3	923	12	473	1,027	-----	-----	Salt water, 930 feet
	25	Riddle	-----	455	do.	800	32	345	1,155	-----	-----	-----
	25	Riddle	Mann, No. 8	450	Robinson-3	819	14	364	1,136	-----	-----	-----
	26	Riddle	-----	445	Robinson-1	911	26	436	1,044	-----	-----	-----
	26	Riddle	Mann, No. 4	445	Robinson-3	915	15	365	1,135	938	-----	-----
	27	Riddle	-----	450	Robinson-1	802	19	357	1,143	816	40	Gas, 915 feet
	27	Riddle	Mann, No. 3	450	Robinson-3	912	26	467	1,033	915	Show	-----
	28	Riddle	-----	450	Robinson-1	795	35	345	1,155	801	40	-----
	28	Riddle	Mann, No. 2	450	Robinson-3	893	41	443	1,057	-----	-----	-----
	29	Riddle	-----	451	Robinson-1	815	5	365	1,135	-----	80	-----
	29	Riddle	Mann, No. 1	451	Robinson-3	901	32	451	1,049	-----	40	-----
	29	Riddle	-----	-----	-----	908	47	457	1,043	-----	-----	-----

Crawford County—Oblong Township.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet	Altitude above datum plane—feet.			
2—												
N. E...	1	Cromack	Stephens, No. 6.	511	Stray..... Robinson-1..... Robinson-3.....	895 930 973	12 35 3	384 419 462	1, 116 1, 081 1, 038	940 940 983		Salt water, 976 feet. Coal 224 and 420 feet. This formation contained pebbles.
	2	Cromack	Stephens, No. 8.	510	Robinson-1.....	925	45	415	1, 085	940	10	Coal 226 feet.
	3	Cromack	Stephens, No. 7.	509	do..... Robinson-3.....	924 974	47 3	415 465	1, 085 1, 035	940	Show	Gas, 924 feet.
	4	Cromack	Stephens, No. 2.	502	Robinson-2..... Robinson-3.....	930 904	29 13	428 462	1, 072 1, 038		30	Quit in sand.
	5	Cromack	Stephens, No. 1.	504	Stray.....	885	64	381	1, 119	940	10	
	6	Bailey & Fritz	Stephens, No. 3.	502	do.....	839	10	337	1, 163		250	
	7	Bailey & Fritz	Stephens, No. 4.	470	Stray.....	834	42	371	1, 068			
	8	Bailey & Fritz	Stephens, No. 2.	468	Stray.....	880	44	371	1, 129			
	9	Bailey & Fritz	Stephens, No. 1.	497	Stray..... Robinson-2.....	765 937	28 55	297 430	1, 203 1, 060	968		Salt water, 968 feet.
	10	Fisher	Miller, No. 2.	470	do.....	909	38	437	1, 061	919	Light	
	11	Fisher	Miller, No. 3.	476	do.....	923	31	447	1, 053	937	Light	Salt water, 947 feet.
	12	Fisher	Miller, No. 4.	507	do.....	945	24	438	1, 062	949	100	
	13	Fisher	Miller, No. 5.	511	do.....	949	20	438	1, 062	951	25	
	14	Fisher	Miller, No. 6.	508	do.....	957	20	439	1, 051	959	25	
	15	Cromack	Stephens, No. 5.	507	do.....	960	24	453	1, 047	984	25	Salt water, 984 feet.
	16	Cromack	Stephens, No. 4.	507	Robinson-1.....	924	26	417	1, 083		20	Quit in sand.
	18	Cromack	Stephens, No. 3.	509	Robinson-2..... do..... Robinson-3.....	933 935 966	18 25 21	446 426 457	1, 054 1, 074 1, 043	971	75	do. Salt water, 978 feet. Gas, 846 feet, 2,000,000 cubic feet, daily.
N. W..	1	Bailey & Fritz	Boa, No. 2.	498	Stray..... Robinson-2.....	846 919	24 11	348 421	1, 152 1, 079	987 953	Gas.	

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
2— N. W.	2	Bailey & Fritz.....	Boa, No. 3.....	472	{	Stray.....	800	10	328	1,172	.....	.....	No record.....
	3	Bailey & Fritz.....	Boa, No. 1.....	472		do.....	820	20	348	1,152	.....	.....	.....
						Robinson-2.....	903	33	431	1,069	940	.....	.....
						Robinson-1.....	860	.....	392	1,108	.....	.....	.....
	4	Bailey & Fritz.....	Purell, No. 1.....	468	{	Robinson-2.....	904	20	436	1,064	904	5	Well abandoned. Salt wafer, 924 feet.....
						Stray.....	835	.....	370	1,130	.....	.....	.....
	5	Bailey & Fritz.....	Purell, No. 2.....	465		Robinson-3.....	927	9	462	1,038	927	.....	.....
	6	Bailey & Fritz.....	Purell, No. 4.....	465		Robinson-1.....	860	.....	393	1,105	.....	.....	.....
	7	Bailey & Fritz.....	Purell, No. 3.....	464	{	Robinson-2.....	919	20	454	1,046	916	75	.....
	8	Ohio.....	Reed, No. 4.....	472		Robinson-3.....	909	25	445	1,053	920	100	Gas, 940 feet.....
	9	Ohio.....	Reed, No. 5.....	472		Stray.....	942	25	470	1,030	.....	100	Gas, 925 feet.....
	10	Ohio.....	Reed, No. 1.....	464		Robinson-3.....	930	16	366	1,134	830	75	Gas, 925 feet.....
	11	Ohio.....	Reed, No. 6.....	466	{	do.....	935	8	469	1,031	935	.....	.....
	12	Ohio.....	Reed, No. 2.....	462		do.....	963	8	473	1,027	963	75	Salt water, 971 feet.....
	13	Ohio.....	Reed, No. 3.....	474		Robinson-1.....	938	10	470	1,030	938	35	.....
	14	Fisher.....	Miller, No. 10.....	490		do.....	860	20	386	1,114	860	15	.....
S. W.	15	Fisher.....	Miller, No. 9.....	494	{	Robinson-3.....	960	9	470	1,030	969	.....	.....
	16	Fisher.....	Miller, No. 11.....	467		Stray.....	949	20	465	1,035	951	.....	.....
						Robinson-3.....	922	13	356	1,144	.....	.....	.....
	17	Fisher.....	Miller, No. 1.....	469		Robinson-2.....	900	22	431	1,069	922	.....	Quit in sand. Well abandoned.....
	1	Wark.....	Lackey, No. 2.....	495	{	Robinson-3.....	953	53	458	1,042	.....	.....	.....
						do.....	1,306	4	811	689	.....	.....	.....
	2	Tecumseh.....	R. W. No. 1.....	496		Stray.....	1,420	20	925	575	.....	.....	Dry.....
	3	Fisher.....	Miller, No. 8.....	490		Robinson-2.....	875	50	279	1,121	990	.....	Dry.....
					{	Robinson-1.....	837	50	447	1,053	945	.....	Well abandoned.....
						Robinson-3.....	887	8	387	1,113	.....	.....	.....
	4	Wark.....	Lackey, No. 4.....	500	{	Robinson-3.....	968	18	468	1,032	.....	30	.....
						do.....	968	18	468	1,032	.....	.....	.....

S. E.	5	Wark.....	Lackey, No. 3.	495 { Robinson-1 Robinson-3	887 965	20 15	392 470	1,108 1,030	.....	.....	30 Dry	No record
	6	Wark.....	Lackey, No. 1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	7	Wark.....	Dennis, No. 2	487 { Robinson-1 Robinson-3	870 948	15 28	383 461	1,117 1,039	.....	.....	75	No record
	8	Wark.....	Dennis, No. 1	.....	883	13	391	1,109	893	.....	10	No record
	9	Wark.....	Dennis, No. 4	476 { Robinson-1 Robinson-3	.....	.....	.....	.....	.....	.....	.....	do
	10	Wark.....	Dennis, No. 3	477 { Robinson-1 Robinson-3	.....	.....	.....	.....	.....	.....	.....	Gas, 950 feet
	1	Fisher.....	McQueen, No. 2	496 { Robinson-1 Robinson-3	858 872	118 4	362 374	1,138 1,126	961	965	.....	Gas, 954 feet
	2	Fisher.....	McQueen, No. 1	498 { Robinson-1 Robinson-3	948 903	20 7	450 358	1,050 1,102	954	967	.....	Well abandoned
	3	Millikin.....	Furnan Hrs., No. 1	505 { Robinson-1 Robinson-3	975 905	29 5	465 398	1,035 1,102	905	925	.....	Light
	4	Fisher.....	Miller, No. 1	510 { Robinson-1 Robinson-3	.....	.....	.....	.....	.....	.....	.....	Dry
N. E.	5	Milliken.....	Furnan Hrs., No. 2	507 { Robinson-1 Robinson-3	.....	.....	.....	.....	.....	.....	.....	Light
	1	Ohio.....	Correll, No. 1	479 { Robinson-1 Robinson-3	942	37	463	1,037	942	.....	125	.....
	2	Ohio.....	Correll, No. 3	465 { Robinson-1 Robinson-3	940	10	475	1,025	940	.....	10	.....
	3	Ohio.....	Correll, No. 2	492 { Robinson-1 Robinson-3	963	21	471	1,029	963	.....	100	.....
	4	Ohio.....	Mefford, No. 3	492 { Robinson-1 Robinson-3	867	10	375	1,125	867	.....	5	.....
	5	Ohio.....	Mefford, No. 2	492 { Robinson-1 Robinson-3	967	15	475	1,025	967	.....	25	.....
	1	Brown & Hogue.....	Harbison, No. 1	455 { Robinson-1 Robinson-3	833	.....	378	1,122	965	.....	.....	Dry
	1	Brown & Hogue.....	Harbison, No. 7	453 { Robinson-1 Robinson-3	782	.....	329	1,171	.....	.....	.....	.....
	2	Ohio.....	Mefford, No. 5	453 { Robinson-1 Robinson-3	834	16	381	1,119	850	.....	.....	.....
	3	Ohio.....	Mefford, No. 6	458 { Robinson-1 Robinson-3	838	12	385	1,115	838	.....	75	Gas, 815 feet
S. E.	4	Ohio.....	Mefford, No. 4	491 { Robinson-1 Robinson-3	855	10	397	1,103	860	.....	10	Gas, 858 feet
	5	Brown & Hogue.....	Harbison, No. 11	453 { Robinson-1 Robinson-3	1,001	14	543	957	.....	.....	.....	Salt water, 1,015 feet
	6	Brown & Hogue.....	Harbison, No. 9	471 { Robinson-1 Robinson-3	835	15	382	1,118	866	.....	20	.....
	7	Brown & Hogue.....	Harbison, No. 8	456 { Robinson-1 Robinson-3	994	15	523	977	.....	.....	.....	.....
	8	Brown & Hogue.....	Harbison, No. 5	456 { Robinson-1 Robinson-3	980	17	524	976	990	.....	.....	Salt water, 990 feet
	1	Partridge & Newcomer.....	Lackey, No. 3	490 { Robinson-1 Robinson-3	800	.....	344	1,156	.....	.....	.....	.....
	2	Partridge & Newcomer.....	Lackey, No. 1	493 { Robinson-1 Robinson-3	819	16	363	1,137	865	.....	.....	.....
	3	Partridge & Newcomer.....	W. Lackey, No. 4	494 { Robinson-1 Robinson-3	890	2	397	1,103	.....	.....	.....	Dry
	4	Partridge & Newcomer.....	W. Lackey, No. 5	496 { Robinson-1 Robinson-3	1,012	2	519	981	.....	.....	.....	No sand, salt water, 1,065 feet
	5	Partridge & Newcomer.....	W. Lackey, No. 2	494 { Robinson-1 Robinson-3	886	18	392	1,108	.....	.....	.....	Well abandoned
	6	Ohio.....	J. Lackey, No. 1	493 { Robinson-1 Robinson-3	890	15	394	1,106	970	.....	.....	Salt water, 1,026 feet
N. E.	7	Brown & Hogue.....	Harbison, No. 4	492 { Robinson-1 Robinson-3	887	15	393	1,107	934	.....	.....	.....
	8	Brown & Hogue.....	Harbison, No. 3	493 { Robinson-1 Robinson-3	890	18	397	1,103	1,022	.....	25	.....
	9	Ohio.....	Mefford, No. 1	493 { Robinson-1 Robinson-3	891	13	399	1,101	890	.....	.....	.....
	1	Bruner.....	Harte, No. 1	488 { Robinson-1 Robinson-3	896	.....	401	1,099	902	.....	.....	Salt water, 915 feet
	2	Ohio.....	Correll, No. 1	479 { Robinson-1 Robinson-3	890	2	397	1,103	.....	.....	.....	No record
	3	Ohio.....	Correll, No. 3	465 { Robinson-1 Robinson-3	1,012	2	519	981	.....	.....	.....	.....
	4	Ohio.....	Correll, No. 2	492 { Robinson-1 Robinson-3	886	18	392	1,108	.....	.....	.....	Gas, 685 feet
	5	Ohio.....	Mefford, No. 3	492 { Robinson-1 Robinson-3	890	15	394	1,106	970	.....	.....	Gas, 813 feet
	6	Ohio.....	Mefford, No. 2	492 { Robinson-1 Robinson-3	887	15	393	1,107	934	.....	.....	Gas, 847 feet
	7	Ohio.....	Mefford, No. 1	493 { Robinson-1 Robinson-3	890	18	397	1,103	1,022	.....	.....	.....

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
N. E.	2	Bruner.	Harte, No. 2.	486	Shallow.....	665	.....	179	1,321	.....	.....	Gas, 665 feet.
					do.....	765	.....	279	1,221	.....	.....	Gas, 765 feet.
					Stray.....	805	.....	319	1,181	.....	.....	Gas, 805 feet.
	3	Bruner.	Harte, No. 3.	484	Robinson-1.....	832	63	366	1,134	858	925	Gas, 854 feet.
					Stray.....	812	14	328	1,172	816	.....	.....
					Robinson-1.....	854	24	370	1,130	859	.....	.....
	4	Ohio.	Newlin, No. 1.	482	Robinson-2.....	882	13	398	1,102	.....	.....	Gas, 916 feet.
					Stray.....	916	.....	432	1,068	.....	.....	12 Gas, 880 feet. Salt water, 900 feet.
					Robinson-1.....	850	.....	391	1,109	800	.....	12 Gas, 800 feet.
	5	Ohio.	Newlin, No. 3.	483	do.....	875	30	332	1,108	885	.....	15 Gas, 880 feet.
					Stray.....	908	15	327	1,173	815	.....	.....
					Robinson-3.....	968	10	487	1,013	848	.....	20 Salt water, 978 feet.
N. W.	7	N. Y. Oil & Petroleum Co.	Biggs, No. 8.	478	Robinson-1.....	842	15	364	1,136	848	.....	25 Gas, 842 feet.
					Stray.....	795	10	309	1,191	850	.....	Gas, 795 feet.
					Robinson-1.....	850	41	364	1,136	850	35	Gas, 800 feet.
	10	N. Y. Oil & Petroleum Co.	Biggs, No. 3.	484	Stray.....	800	10	316	1,184	860	50	Gas, 800 feet.
					Robinson-1.....	858	27	374	1,126	860	50	Gas, 800 feet.
					Stray.....	795	30	312	1,188	805	50	Gas, 800 feet.
	11	N. Y. Oil & Petroleum Co.	Biggs, No. 2.	483	Robinson-1.....	873	19	390	1,110	.....	.....	.....
					Stray.....	810	10	331	1,169	876	70	.....
					Robinson-1.....	870	25	391	1,109	876	70	.....
	12	N. Y. Oil & Petroleum Co.	Biggs, No. 4.	479	do.....	867	15	387	1,113	870	20	.....
					Robinson-2.....	910	16	429	1,071	429	25	.....
					Stray.....	846	.....	367	1,133	.....	.....	.....
	13	N. Y. Oil & Petroleum Co.	Biggs, No. 7.	480	Robinson-1.....	871	.....	392	1,108	.....	Show	Well abandoned
					Robinson-2.....	910	10	431	1,069	.....	.....	No record.
					Stray.....	812	25	329	1,171	826	.....	.....
	14	N. Y. Oil & Petroleum Co.	Biggs, No. 9.	481	Robinson-1.....	873	31	390	1,110	880	908	.....
					Stray.....	873	.....	.....	.....	.....	.....	.....
					Robinson-1.....	873	.....	.....	.....	.....	.....	.....
	1	Parker & Edwards	W. Buck, No. 13.	479	Robinson-1.....	871	.....	392	1,108	.....	Show	Well abandoned
					Robinson-2.....	910	10	431	1,069	.....	.....	No record.
					Stray.....	812	25	329	1,171	826	.....	.....
	2	Parker & Edwards	W. Buck, No. 8.	483	Robinson-1.....	873	.....	.....	.....	.....	.....	.....
					Robinson-2.....	910	10	431	1,069	.....	.....	.....
					Stray.....	812	25	329	1,171	826	.....	.....
	3	Parker & Edwards	W. Buck, No. 2.	483	Robinson-1.....	873	.....	.....	.....	.....	.....	.....
					Robinson-2.....	910	10	431	1,069	.....	.....	.....
					Stray.....	812	25	329	1,171	826	.....	.....

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
5— N. E..		3 American Oil and Development Co. American Oil and Development Co.	Short, No. 15.	467	Robinson-1.	811	20	344	1,156	950	Dry	.....
			Short, No. 14.	468	Stray.	828	17	332	1,168	.....	.....	.....
					Robinson-1.	830	12	360	1,140	.....	.....	Salt water, 865 feet.
5		5 American Oil and Development Co.	Short, No. 13.	460	Robinson-2.	850	20	382	1,118	.....	.....	.....
					Robinson-1 (?) . . .	806	49	346	1,154	.....	.....	.....
					Robinson-3.	897	5	437	1,063	.....	.....	.....
6		6 American Oil and Development Co.	Short, No. 10.	483	Stray.	827	12	344	1,156	.....	.....	.....
					Robinson-1.	850	10	367	1,133	.....	.....	.....
					Robinson-2.	852	10	339	1,101	.....	.....	.....
7		7 Parker & Edwards.	W. Buck, No. 7.	464	do.	874	24	410	1,090	.....	.....	Salt water, 885 feet. Well abandoned.
					Robinson-3.	883	.....	432	1,068	.....	.....	.....
			W. Buck, No. 11.	461	Robinson-4.	908	.....	447	1,053	.....	.....	.....
8		8 Parker & Edwards.	W. Buck, No. 10.	460	Robinson-1.	823	15	363	1,137	.....	.....	.....
					Robinson-3.	885	25	425	1,075	910	.....	.....
					Robinson-1.	857	28	379	1,121	862	.....	.....
10		10 Ohio.	D. Kirtland, No. 1.	478	Robinson-3.	918	11	440	1,060	.....	.....	Salt water, 953 feet.
			D. Kirtland, No. 5.	476	Robinson-1.	808	68	332	1,168	838	.....	.....
			D. Kirtland, No. 2.	471	do.	828	49	357	1,143	852	200	.....
12		12 Ohio.	D. Kirtland, No. 2 (east).	475	do.	850	27	375	1,125	881	.....	.....
			D. Kirtland, No. 3 (east).	475	do.	850	20	370	1,130	885	.....	.....
			D. Kirtland, No. 3.	475	do.	845	20	370	1,123	.....	.....	.....
15		15 Red Bank.	D. Kirtland, No. 1 (east).	478	Robinson-3.	855	25	377	1,123	.....	.....	.....
					Robinson-1 (?) . . .	916	14	438	1,062	855	150	Gas, 821 feet.
			O. Kirtland, No. 2.	477	Robinson-3.	815	54	338	1,162	893	.....	.....
16		Brenneman & McDonald.			Robinson-1 (?) . . .	893	21	416	1,084	893	.....	.....
					Robinson-3.	801	55	326	1,174	829	.....	.....
					Robinson-1 (?) . . .	858	22	383	1,117	897	.....	Salt water, 858 feet.
17		Brenneman & McDonald.	O. Kirtland, No. 3.	475	Robinson-2.	897	14	422	1,078	913	.....	.....
					Robinson-3.	897	14	422	1,078	913	.....	.....
					Robinson-3.	897	14	422	1,078	913	.....	.....

[illegible]

N. W.:

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
5—N. W.	13	Brenneman & McDonald.	O. Dee, No. 3.	485	Robinson-2	887	59	406	1,094	885	954	No record.	
	14	Brenneman & McDonald.	O. Dee, No. 4.	481	Robinson-1	843	30	360	1,140			Salt water, 910 feet.	
	15	Brenneman & McDonald.	O. Kirtland, No. 14.	483	Robinson-2	887	16	404	1,096				
					Robinson-3	927	18	444	1,056				
					Stray	808	36	329	1,171			Show	
	16	Brenneman & McDonald.	O. Kirtland, No. 7.	479	Robinson-1	850	18	371	1,129	850			
					Robinson-2	874	14	395	1,105				
					Stray	891	10	412	1,088			Salt water.	
					Robinson-3	917	8	438	1,062				
	17	Brenneman & McDonald.	O. Kirtland, No. 6.	479	Robinson-2	880	60	401	1,099	880			
	18	Brenneman & McDonald.	O. Kirtland, No. 5.	467	Robinson-1	813	56	345	1,154				
	19	Red Bank	D. Kirtland, No. 1	464	Robinson-3	892	16	425	1,075		918		
20	Red Bank	D. Kirtland, No. 3	481	Robinson-1	825	45	361	1,139	830		200		
21	Red Bank	D. Kirtland, No. 2	481	do.	851	71	370	1,130	895		25		
22	Ohio.	D. Kirtland, No. 3.	466	do.	845	85	361	1,139	850		20		
23	Ohio.	D. Kirtland, No. 4.	474	Robinson-2	880	59	396	1,104	880				
24	Ohio.	D. Kirtland, No. 6.	485	Robinson-1	820	44	339	1,146	848				
25	Brenneman & McDonald.	O. Kirtland, No. 15.	478	Robinson-3	908	36	434	1,066					
26	Brenneman & McDonald.	O. Kirtland, No. 16.	458	Robinson-2	895	5	410	1,090					
27	Brenneman & McDonald.	O. Kirtland, No. 17.	458	Robinson-3	914	33	429	1,071					
5—S. W.	1	Rapp	Zeigler, No. 4.	458	Robinson-1	854	51	376	1,124	887			
	2	Rapp	Zeigler, No. 3.	457	Robinson-3	927	25	449	1,051				
					Robinson-2	865	25	407	1,093	865			
					Robinson-3	899	28	441	1,059	927			

3	Rapp.	Zeigler, No. 1.	Robinson-3.	894	5	426	1,074	953	
4	Rapp.	Zeigler, No. 2.	Robinson-4.	945	15	477	1,023	900	100
5	Jennings.	McCrillis, No. 15.	Robinson-1.	848	25	401	1,099	937	
6	Jennings.	McCrillis, No. 14.	Robinson-2.	876	6	404	1,096	947	
7	Jennings.	McCrillis, No. 12.	Robinson-3.	905	17	433	1,067	912	Quit in sand.
8	Jennings.	McCrillis, No. 7.	Robinson-1 (?)	888	28	421	1,079	901	
9	Jennings.	McCrillis, No. 17.	Robinson-2.	870	9	397	1,103	875	
10	Jennings.	McCrillis, No. 13.	Robinson-3.	890	14	425	1,075	900	
11	Jennings.	McCrillis, No. 10.	Robinson-1	844	16	371	1,129	900	
12	Ohio.	Zeigler, No. 1.	Robinson-2.	862	15	389	1,111	900	
13	Ohio.	Zeigler, No. 2.	Robinson-3.	890	7	417	1,083	900	
14	Ohio.	Zeigler, No. 3.	Robinson-1	935	16	462	1,038	900	
15	Ohio.	Zeigler, No. 4.	Robinson-2.	865	32	401	1,099	900	
16	Pure.	Heck, No. 3.	Robinson-3.	857	13	400	1,100	900	
17	Pure.	Heck, No. 2.	Robinson-1	888	7	431	1,069	900	
18	Pure.	Heck, No. 1.	Robinson-2.	916	18	459	1,041	900	
19	Pure.	Heck, No. 5.	Robinson-3.	822	37	364	1,136	900	
20	Pure.	Heck, No. 6.	Robinson-1	864	15	406	1,094	900	
21	Pure.	Heck, No. 4.	Robinson-2.	848	15	391	1,100	900	
22	Pure.	Heck, No. 3.	Robinson-3.	868	30	411	1,089	900	
23	Pure.	Heck, No. 2.	Robinson-1	844	15	387	1,113	900	
24	Pure.	Heck, No. 1.	Robinson-2.	864	20	407	1,093	900	
25	Pure.	Heck, No. 5.	Robinson-3.	876	23	419	1,081	900	
26	Pure.	Heck, No. 4.	Robinson-1	880	26	423	1,077	900	
27	Pure.	Heck, No. 3.	Robinson-2.	918	19	446	1,054	900	
28	Pure.	Heck, No. 2.	Robinson-3.	870	20	394	1,106	900	
29	Pure.	Heck, No. 1.	Robinson-1	895	15	419	1,081	900	
30	Pure.	Heck, No. 6.	Robinson-2.	850	16	391	1,109	900	
31	Pure.	Heck, No. 5.	Robinson-3.	890	10	431	1,069	900	
32	Pure.	Heck, No. 4.	Robinson-1	870	12	413	1,087	900	
33	Pure.	Heck, No. 3.	Robinson-2.	1,040	220	584	1,040	900	
34	Pure.	Heck, No. 2.	Robinson-3.	1,360	15	904	596	900	
35	Pure.	Heck, No. 1.	Robinson-1	1,400	20	944	556	900	
36	Pure.	Heck, No. 6.	Robinson-2.	856	15	384	1,116	900	
37	Pure.	Heck, No. 5.	Robinson-3.	880	18	408	1,092	900	
38	Pure.	Heck, No. 4.	Robinson-1	830	20	371	1,129	900	
39	Pure.	Heck, No. 3.	Robinson-2.	878	9	419	1,081	900	
40	Pure.	Heck, No. 2.	Robinson-3.	905	10	446	1,054	900	
41	Pure.	Heck, No. 1.	Robinson-1	850	5	375	1,125	900	
42	Pure.	Heck, No. 6.	Robinson-2.	883	13	408	1,092	900	
43	Pure.	Heck, No. 5.	Robinson-3.	907	17	432	1,068	900	
44	Pure.	Heck, No. 4.	Robinson-1	830	10	365	1,135	900	
45	Pure.	Heck, No. 3.	Robinson-2.	858	12	393	1,107	900	
46	Pure.	Heck, No. 2.	Robinson-3.	888	21	423	1,077	900	
47	Pure.	Heck, No. 1.	Robinson-1	894	15	404	1,094	900	
48	Pure.	Heck, No. 6.	Robinson-2.	876	6	404	1,096	900	
49	Pure.	Heck, No. 5.	Robinson-3.	905	17	433	1,067	900	
50	Pure.	Heck, No. 4.	Robinson-1	870	9	397	1,103	9	

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
S. E...	1	Jennings.....	McCrillis, No. 4.....	475	Robinson-1.....	849	16	374	1,126	849	.....	.....
					Robinson-2.....	898	15	423	1,077	898	.....	.....
					Robinson-1.....	850	4	377	1,123	.....	917	.....
					Stray.....	859	6	386	1,114	.....	.....	.....
					do.....	872	15	399	1,101	.....	.....	.....
					Robinson-2.....	908	12	435	1,065	.....	936	.....
					Robinson-1.....	864	21	394	1,106	.....	.....	.....
					Robinson-2.....	900	.....	430	1,070	.....	.....	.....
					Robinson-3.....	922	8	452	1,048	922	932	.....
					Robinson-1.....	848	12	371	1,123	.....	.....	.....
					Robinson-2.....	872	21	385	1,105	.....	.....	.....
					Robinson-3.....	906	12	429	1,071	.....	923	.....
					Robinson-2.....	845	33	368	1,132	845	912	.....
					Robinson-1.....	888	20	411	1,089	888	.....	.....
					Robinson-3.....	922	12	447	1,053	.....	939	.....
	7	Jennings.....	McCrillis, No. 20.....	475	Robinson-1.....	874	12	399	1,101	.....	.....	.....
	8	Jennings.....	McCrillis, No. 21.....	469	Robinson-3.....	846	10	377	1,123	.....	951	.....
	9	Jennings.....	McCrillis, No. 2.....	475	do.....	864	30	389	1,111	864	927	.....
	10	Parker and Edwards.....	McCrillis, No. 1.....	458	do.....	831	38	373	1,127	.....	936	.....
	11	Parker and Edwards.....	W. Buck, No. 4.....	464	do.....	843	49	379	1,121	.....	927	.....
					do.....	837	47	377	1,123	.....	.....	.....
					Robinson-3.....	892	14	432	1,068	.....	914	Salt water.
	12	Parker and Edwards.....	W. Buck, No. 5.....	460	do.....	887	15	427	1,073	.....	.....	.....
					Robinson-4.....	913	10	450	1,050	.....	.....	.....
	13	Parker and Edwards.....	W. Buck, No. 14.....	463	Robinson-1.....	840	33	380	1,120	.....	.....	.....
					Robinson-3.....	893	6	433	1,067	.....	.....	Salt water.
					Robinson-1.....	846	17	370	1,130	.....	.....	.....
	14	Jennings.....	McCrillis, No. 18.....	476	Stray.....	877	10	401	1,090	.....	.....	.....
					Robinson-3.....	897	8	421	1,070	897	947	.....
					Robinson-2.....	872	13	400	1,091	.....	.....	.....
	15	Jennings.....	McCrillis, No. 16.....	463	Robinson-4.....	915	15	452	1,048	.....	959	.....

16	Jennings.	McCrillis, No. 3.	475	Robinson-2	867	141	392	1,108		
		Robinson-3.		Robinson-3.	900	20	425	1,075		Salt water.
		Robinson-4.		Robinson-4.	925	5	450	1,050		930
17	Jennings.	McCrillis, No. 6.	471	Robinson-1	812	71	341	1,139		Quit in sand.
		Robinson-3.		Robinson-3.	896	9	425	1,075		896
		Stray.		Stray.	810	25	334	1,166		829
18	Jennings.	McCrillis, No. 8.	476	Robinson-2	874	18	398	1,102		
		Robinson-3.		Robinson-3.	905	6	430	1,070		Quit in sand.
		Robinson-1.		Robinson-1.	835	20	358	1,142		
19	Jennings.	McCrillis, No. 22.	477	Robinson-2	860	18	383	1,117		860
		Robinson-3.		Robinson-3.	904	14	427	1,073		Quit in sand.
										918
1	Brenneman & McDonald.	G. Dee, No. 1.	461	Robinson-1	866	14	405	1,095		866
		Robinson-2.		Robinson-2.	892	30	431	1,069		
		Robinson-3.		Robinson-3.	943	27	482	1,018		975
2	Brenneman & McDonald.	G. Dee, No. 2.	460	Robinson-1	863	10	403	1,097		
		Robinson-2.		Robinson-2.	891	83	431	1,069		
3	Brenneman & McDonald.	G. Dee, No. 3.	463	Robinson-1	860	22	397	1,103		
		Robinson-2.		Robinson-2.	894	24	431	1,069		
4	Brenneman & McDonald.	Wekeman, No. 5.	485	Robinson-1	890	19	405	1,095		
		Robinson-3.		Robinson-3.	937	51	452	1,048		988
5	Brenneman & McDonald.	Wekeman, No. 4.	497	Stray.	860	8	363	1,137		
		Robinson-1.		Robinson-1.	896	20	399	1,101		925
6	Brenneman & McDonald.	Wekeman, No. 1.	460	Robinson-1	822	92	362	1,138		822
		Robinson-3.		Robinson-3.	921	24	461	1,039		945
7	Brenneman & McDonald.	Wekeman, No. 2.	496	Robinson-1	892	37	396	1,104		929
		Robinson-3.		Robinson-3.	974	22	478	1,022		996
8	Brenneman & McDonald.	Wekeman, No. 3.	497	Robinson-2	941	19	444	1,056		
		Robinson-3.		Robinson-3.	980	5	483	1,017		987
9	McBride.	Muchmore, No. 6.	518	Stray.	827		309	1,191		Salt water.
		Muchmore, No. 2.	465	Robinson-1	903	13	385	1,115		do.
10	McBride.	Muchmore, No. 1.	521							Dry
11	McBride.									Dry
12	McBride.	Muchmore, No. 5.	507	Stray.	814		307	1,183		No record.
		Muchmore, No. 7.	479	Robinson-1	915	8	408	1,092		do.
13	McBride.	Muchmore, No. 3.	517	Robinson-2	942	10	438	1,062		
1	McBride.	Muchmore, No. 4.	509	do.	912	53	433	1,067		916
		Muchmore, No. 1.	515	do.	938	23	421	1,079		
2	McBride.	Muchmore, No. 2.	497	Robinson-1	912	8	403	1,097		912
		Caywood, No. 1.	515	Robinson-2	941	16	432	1,068		941
		Ormiston, No. 1.	505	Robinson-3	994	7	479	1,021		1,074
1	Mahutska.	Caywood, No. 2.	499	Robinson-1	903	5	398	1,102		1 Well abandoned.
2	Thompson.	Caywood, No. 1.	490	Robinson-2	929	15	424	1,076		
3	Thompson.	Heek, No. 5.	486	Robinson-3	995	20	496	1,004		Dry
1	Pure.	Zeigler, No. 4.	497	Robinson-2	990	19	497	1,003		30
		Zeigler, No. 3.	479	Robinson-1	935	7	439	1,061		20
		Zeigler, No. 2.	464	Robinson-3	965	22	468	1,032		20
3	Brenneman & McDonald.	Zeigler, No. 3.	479	Robinson-1	902	14	393	1,107		Salt water, 1,006 feet.
		Zeigler, No. 2.	464	Robinson-2	918	21	439	1,061		
		Zeigler, No. 1.	471	Robinson-3	980	21	439	1,061		939
		Zeigler, No. 1.	471	do.	902	51	431	1,069		886
		Zeigler, No. 1.	471	do.	880		416	1,084		886
		Zeigler, No. 1.	471	do.	902		431	1,069		886

9

N. E.

N. W.:

S. W.:

S. E. . .

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
7— N. E...	1	Wabash.....	Wekeman, No. 5.....	480	Robinson-2.....	921	10	441	1,059	.....	.....	.....	.....
	2	Wabash.....	Wekeman, No. 4.....	484	Stray.....	948	12	468	1,032	.....	.....	.....	.....
	3	Red Bank.....	Sibley, No. 1 "B".....	485	Robinson-1.....	885	22	374	1,126	.....	.....	.....	.....
	4	Red Bank.....	Sibley, No. 2 "B".....	482	Robinson-1.....	900	55	415	1,085	.....	.....	50	.....
	5	Red Bank.....	Sibley, No. 1 "R. B".....	482	Robinson-2.....	938	30	456	1,044	940	.....	25	.....
	6	Red Bank.....	Sibley, No. 2 "R. B".....	484	do.....	938	3	456	1,044	942	.....	15	.....
	7	Ohio.....	Sibley, No. 1.....	483	do.....	949	.....	465	1,035	953	.....	20	.....
	8	Ohio.....	Edwards, No. 10.....	481	Robinson-1.....	928	6	445	1,055	.....	.....	.....	Salt water, 995 feet.....
	9	Ohio.....	Edwards, No. 2.....	484	Robinson-2.....	945	15	464	1,036	.....	.....	3	Salt water, 950 feet.....
	10	Ohio.....	Edwards, No. 4.....	478	do.....	952	33	468	1,032	955	.....	30	Gas, 955 feet. Salt water, 990 feet.....
N. W..	1	Ohio.....	Edwards, No. 4.....	478	Robinson-3.....	973	9	495	1,005	975	.....	5	Gas, 975 feet.....
	2	Ohio.....	Edwards, No. 6.....	483	Robinson-4.....	987	5	500	991	.....	.....	12	Gas, 980 feet.....
	3	Ohio.....	Edwards, No. 7.....	482	Robinson-3.....	978	12	495	1,005	980	.....	35	Gas, 990 feet.....
	4	Ohio.....	Edwards, No. 8.....	485	do.....	988	12	506	994	992	.....	10	Gas, 982 feet. Salt water, 990 feet.....
	5	Ohio.....	Edwards, No. 9.....	382	do.....	980	9	495	1,005	984	.....	40	.....
	6	McBride.....	Berryhill, No. 9.....	492	Robinson-2.....	960	12	498	1,002	986	.....	.....	Salt water.....
	7	McBride.....	Berryhill, No. 6.....	494	Robinson-3.....	990	8	498	1,002	990	.....	.....	.....
	8	McBride.....	Berryhill, No. 5.....	477	Robinson-4.....	1,003	17	511	989	1,003	.....	.....	Salt water.....
	9	McBride.....	Berryhill, No. 10.....	488	Robinson-2.....	965	12	471	1,028	965	.....	.....	Salt water.....
	10	Unknown.....	Kirtland, No. 1.....	491	Robinson-3.....	992	12	498	1,002	.....	.....	.....	Salt water.....

S. W.	11 Wabash.....	J. Smith, No. 1.....	485	Robinson-3	997	31	512	988			
	12 Red Bank.....	J. Smith, No. 1.....	493	Robinson-4	1, 110	10	517	983			
	13 Ohio.....	J. Smith, No. 2.....	486	Robinson-3	1, 050	5	528	943	1, 055	Dry	Salt water, 1,055 feet
	14 Ohio.....	J. Smith, No. 1.....	488	Robinson-4	995	5	507	993	1, 035		Well abandoned
	1 McBride.....	Berryhill, No. 7.....	486	Robinson-2	1, 030	24	542	958	1, 054	Dry	
	2 McBride.....	Berryhill, No. 4.....	476	Robinson-3	954	40	468	1, 032			Well abandoned.
	3 McBride.....	Berryhill, No. 3.....	487	Robinson-2	972	6	496	1, 004			Salt water.
	4 McBride.....	Berryhill, No. 11.....	488	Robinson-3	967		518	982			
	5 McBride.....	Berryhill, No. 13.....	488	Robinson-2	988	32	480	1, 020			
				Robinson-3	974		486	1, 014			Salt water.
				Robinson-2	1, 000	35	512	988			
				Robinson-3	955		467	1, 033			Salt water.
				Robinson-2	997	5	509	991	1, 030	Dry	
				Robinson-3	949		464	1, 036			Salt water
S. E.	1 McBride.....	Berryhill, No. 2.....	485	Robinson-3	986	13	501	999	do		do
	2 McBride.....	Berryhill, No. 12.....	484	Robinson-2	965	26	481	1, 019	do		do
	3 McBride.....	Berryhill, No. 1.....	483	Robinson-3	985	26	501	999			Salt water.
	4 Ohio.....	Edwards, No. 1.....	483	Robinson-1	928	445	445	1, 055			
				Robinson-3	992	6	509	991			
				Robinson-4	1, 015	5	497	1, 003	985		Gas, 985 feet
				Robinson-3	1, 064		581	919			Salt water.
	5 Ohio.....	Edwards, No. 11.....	482	Robinson-3	981	42	499	1, 001			
	6 Ohio.....	Edwards, No. 5.....	482	Robinson-3	1, 078		596	904			Salt water
	7 Ohio.....	Edwards, No. 3.....	480	Robinson-2	975	12	493	1, 007	980	Dry	5 Gas, 980 feet
	8 Ohio.....	Edwards, No. 1.....	478	Robinson-2	947	10	467	1, 033	950	15	Gas, 950 feet
	9 Ohio.....	Neeley, No. 1.....	475	Robinson-3	950	48	475	1, 025	978	150	No record
	10 Ohio.....	Neeley, No. 1.....	476	Robinson-3	950	48	475	1, 025	978		
	11 Ohio.....	Shultz, No. 1.....	473	do	952	26	476	1, 024			
S. N. E.	12 Ohio.....	Shultz, No. 5.....	473	do	953	13	480	1, 020	953	35	Gas, 954 feet
	13 Ohio.....	Shultz, No. 2.....	475	Robinson-3	950	11	472	1, 028	950	Dry	No record
	14 Ohio.....	Shultz, No. 4.....	478	Robinson-3	950	11	472	1, 028	950	20	Gas, 951 feet
	15 Ohio.....	Shultz, No. 3.....	480	Robinson-2	941	6	461	1, 039			Samples were saved and studied from this well and the log is published elsewhere in this report.
		Shultz, No. 7.....	485	Robinson-1	910	40	425	1, 075			
S. N. E.	1 Ohio.....	Keeley, No. 15.....	476	do	862	7	386	1, 114	864	5	Gas, 864 feet
	2 Ohio.....	Keeley, No. 14.....	477	do	872		395	1, 105	876	60	Gas, 876 feet
	3 Ohio.....	Keeley, No. 8.....	465	do	855	35	390	1, 110	870	8	Gas, 870 feet. Salt water, 900 feet.....
	4 Ohio.....	Keeley, No. 4.....	474	do	873	17	399	1, 101	883	45	Gas, 883 feet.....
				Robinson-3	929		455	1, 045		929	Salt water.
				Robinson-1	875	15	402	1, 098	880	30	Gas, 878 feet
5 Ohio.....	Keeley, No. 2.....	473	Robinson-2	900	10	427	1, 073		928	Salt water.	
			Robinson-3	928		455	1, 045				
			Robinson-1	868	15	398	1, 102	875	18	Gas, 875 feet	
6 Ohio.....	Keeley, No. 7.....	470	Robinson-2	890	25	420	1, 080	913	18	Salt water, 913 feet	

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. E...	7	Ohio.....	Keeley, No. 9.	467	Robinson-1.....	860	11	393	1,107	865	.....	100	Gas, 865 feet.
					Robinson-2.....	912	9	445	1,055	.....	.....		Salt water.
	8	Ohio.....	Keeley, No. 11	453	Robinson-3.....	925	35	438	1,042	925	.....		Gas, 852 feet.
					Robinson-1.....	850	37	397	1,103	852	.....		Salt water.
	9	Flannigan.....	Apple, No. 6.	470	Robinson-3.....	930	4	477	1,023	.....	914	Dry	
	10	Flannigan.....	Apple, No. 3.	449	Robinson-2.....	888	4	418	1,082	.....	.....
	11	Flannigan.....	Apple, No. 5.	450	Stray.....	868	5	419	1,081	.....	923		
	12	Flannigan.....	Apple, No. 4.	474	Robinson-2.....	887	17	438	1,062	.....	893		
	13	Ohio.....	Keeley, No. 13.	478	do.....	874	16	424	1,076	.....	.....
	2	Ohio.....	Keeley, No. 5.	471	Robinson-1.....	870	.....	392	1,108	870	.....	Dry	No sands.
N. W..					do.....	852	13	394	1,106	868	.....	10	Gas, 875 feet.
					do.....	854	10	394	1,106	870	.....	30	Gas, 868 feet.
	3	Ohio.....	Keeley, No. 3.	460	do.....	855	20	435	1,065	857	.....	200	Gas, 870 feet.
					Robinson-2.....	895	20	435	1,065	.....	.....	20	Gas, 857 feet.
	4	Ohio.....	Keeley, No. 10.	458	Robinson-3.....	930	.....	470	1,030	930	.....		Salt water.
					Robinson-1.....	873	17	415	1,085	878	.....		Gas, 878 feet.
	5	Ohio.....	Keeley, No. 1.	456	Robinson-2.....	900	15	442	1,058	.....	.....		Salt water.
	6	Ohio.....	Keeley, No. 6.	459	Robinson-3.....	940	.....	432	1,018	.....	.....		Salt water.
	7	Flannigan.....	Apple, No. 2.	452	Robinson-1.....	870	34	383	1,117	880	.....	15	Gas, 900 feet.
	8	Flannigan.....	Apple, No. 1.	450	Robinson-2.....	902	12	443	1,057	.....	914		Gas, 850 feet.
	9	Wabash.....	Wekeman, No. 1.	478	do.....	889	19	439	1,061	.....	916		Salt water, 914 feet.
	10	Wabash.....	Wekeman, No. 3.	458	Robinson-1.....	874	30	396	1,104	.....	.....
	11	Wabash.....	Wekeman, No. 2.	457	Robinson-3.....	930	19	452	1,048	.....	.....
					Robinson-1.....	876	15	418	1,082	.....	.....
					Robinson-2.....	904	10	446	1,054	.....	.....
	12	Wabash.....	Wekeman, No. 6.	478	do.....	891	58	434	1,066	.....	.....
					Stray.....	835	40	357	1,143	.....	.....
				Robinson-1.....	899	24	421	1,079	.....	.....	
				Robinson-3.....	930	15	452	1,048	.....	.....	

S. W.	1 Crescent.....	Shultz, No. 3.....	Robinson-1.....	898	121	437	1,063	.....	.....	.....
			Robinson-2.....	925	26	464	1,036	.....	.....	963
	2 Flannigan.....	Murphy, No. 1.....	Robinson-1.....	872	6	420	1,080	.....	.....	.....
			Robinson-3.....	958	8	442	1,038	.....	.....	.....
	3 Crescent.....	Shultz, No. 2.....	Robinson-4.....	965	15	506	1,094	.....	.....	958
			Robinson-3.....	880	6	415	1,085	.....	.....	.....
	4 Crescent.....	Shultz, No. 1.....	Robinson-1.....	905	5	440	1,060	.....	.....	.....
			Robinson-2.....	1,010	56	545	1,060	.....	.....	1,066
			Robinson-4.....	841	9	392	1,108	.....	.....	Dry
			Stray.....	868	22	419	1,081	.....	.....	50
S. E.	1 Mahutska.....	Netherly, No. 1.....	Robinson-1.....	830	5	380	1,120	.....	.....	.....
	2 Mahutska.....	Netherly, No. 3.....	Stray.....	860	10	410	1,060	.....	.....	50
			Robinson-1.....	889	6	419	1,081	.....	.....	.....
N. E...	3 Mahutska.....	Netherly, No. 4.....	Robinson-4.....	1,046	.....	576	1,924	.....	.....	Salt water. Well abundant.
			Robinson-1.....	860	12	410	1,090	.....	.....	50
	4 Mahutska.....	Netherly, No. 2.....	Robinson-1.....	850	15	400	1,100	.....	.....	.....
	5 Lord.....	Kirtland, No. 1.....	do.....	842	.....	392	1,108	.....	.....	.....
	6 Lord.....	Kirtland, No. 6.....	do.....	846	85	396	1,104	.....	.....	Dry
	7 Ohio.....	Keeley, No. 16.....	do.....	.....	.....	.....	.....	.....	.....	.....
			do.....	844	16	387	1,113	.....	.....	200 Gas, 846 feet.
	1 Ohio.....	C. Dees, No. 14.....	do.....	846	11	388	1,112	.....	.....	150 Gas, 848 feet.
	2 Ohio.....	C. Dees, No. 11.....	do.....	845	26	388	1,112	.....	.....	80 Gas, 851 feet.
	3 Ohio.....	C. Dees, No. 15.....	do.....	845	17	389	1,111	.....	.....	60 Gas, 848 feet.

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
9— N. E. N. W.	29 Ohio.	C. Dees, No. 3.	459	Robinson-1.	844	31	385	1,115	846	1,000	Gas, 846 feet.		
	1 Morrison.	Berryhill, No. 4.	478	.do.	858	22	380	1,120		20			
	2 Morrison.	Berryhill, No. 3.	482	.do.	857	23	375	1,125		15			
	3 Morrison.	Berryhill, No. 2.	479	.do.	860	20	381	1,119		30			
	4 Ohio.	Berryhill, No. 3.	479	.do.	858	29	379	1,121	892	25			
	5 Ohio.	Berryhill, No. 2.	483	.do.	860	10	377	1,123	884	75			
	6 Ohio.	Berryhill, No. 1.	465	.do.	852	12	387	1,113	907	200			
	7 Ohio.	Berryhill, No. 4.	478	.do.	853	12	375	1,125	906	45			
	8 Morrison.	Berryhill, No. 1.	475	.do.						Dry	No record.		
	9 McGranahan.	Dennis, No. 1.	473	Stray—	790	10	324	1,176		Dry	No oil sands.		
S. W.	10 McGranahan.	Dennis, No. 2.	466	Robinson-1.	827	21	361	1,139		3	Salt water.		
				Robinson-4.	1,020	4	554	946	1,024		Salt water. Well abandoned.		
	1 Lord.	Kirtland, No. 5.	450	Robinson-1.	837	12	387	1,113	837				
	2 Lord.	Kirtland, No. 4.	450	Robinson-2.	853	12	403	1,097					
	3 Lord.	Kirtland, No. 3.	450	.do.	860	42	410	1,090					
	4 Lord.	Kirtland, No. 2.	450	Robinson-1.	840	20	390	1,110	840	875	Light		
	5 Black and Fitzgerald.	Wilson, No. 4.	450	.do.	837	11	387	1,113	953		Dry	No record.	
	6 Black and Fitzgerald.	Wilson, No. 3.	450	.do.							.do.		
	7 Black and Fitzgerald.	Wilson, No. 2.	450	Wilson.							.do.		
	8 Black and Fitzgerald.	Wilson, No. 1.	450	Wilson.							.do.		
S. E.	9 Ohio.	Good, No. 1.	450	Robinson-1.	851	10	401	1,099	852	25	Gas, 852 feet.		
	10 Ohio.	Good, No. 2.	450	Robinson-2.	862	6	412	1,088	865	7	Gas, 865 feet.		
	11 Ohio.	Good, No. 3.	450	Robinson-3.	874	5	424	1,076	876				
	1 Ohio.	C. Dees, No. 12.	458	Robinson-1.	845	8	395	1,105	847	30	Gas, 847 feet.		
	2 Ohio.	C. Dees, No. 8.	457	.do.	826	17	368	1,132	828	100	Gas, 828 feet.		
	3 Ohio.	C. Dees, No. 6.	458	Robinson-2. Robinson-4.	889 1,003	10	432	1,068	892		Salt water. Well abandoned.		
				Robinson-1.	847	9	389	1,111	852	50	Gas, 849 feet.		

4 Ohio	C. Dees, No. 13	456	do	841	10	385	1, 115	843	150 Gas, 842 feet
5 Ohio	C. Dees, No. 2	460	Robinson-4	992		532	968		Dry Salt water, 1,004 feet
6 Ohio	C. Dees, No. 1	455	Robinson-3	922		467	1,033	930	22 Gas, 927 feet
7 Red Bank	Berry, No. 3	460	Robinson-4	953		493	1,007		Dry Salt water
8 Ohio	Berry, No. 2	458	Robinson-2	903		445	1,035	915	50
9 Ohio	Berry, No. 1	474	Robinson-3	927		469	1,031		
			Robinson-2	910		436	1,064	920	
1 Ohio	Reed, No. 4	470	Robinson-3	913	45	443	1,057	916	20 Gas, 916 feet
2 Ohio	Reed, No. 1	496	Robinson-4	975		505	995		Salt water
			Robinson-3	939		443	1,057		10 Gas, 970 feet
3 Ohio	Reed, No. 3	471	Robinson-1	838		367	1,133		
			Robinson-3	940		469	1,051	940	Gas, 940 feet
			Robinson-4	980		509	991		Salt water, 980 feet. Well abandoned.
4 Ohio	Reed, No. 2	491	Stray	822		331	1,169	824	14 Gas, 824 feet
5 Brown & Hogue	Wakefield, No. 2	490	Robinson-1	871		381	1,119		
			Robinson-3	923	42	433	1,067	971	
6 Brown & Hogue	Wakefield, No. 3	474	Stray	807		333	1,167		
			Robinson-1	852	9	378	1,122		
			Robinson-3	920	30	446	1,054		
			Robinson-1	844		353	1,147		
7 Brown & Hogue	Wakefield, No. 1	491	Robinson-3	934		443	1,057	962	Oil from conglomerate. Quit in sand.
8 Ohio	Wakefield, No. 1	488	do	933	37	445	1,055	938	90 Gas, 938 feet
9 Ohio	Wakefield, No. 2	474	Robinson-4	980		492	1,008		Salt water
10 Ohio	Wakefield, No. 3	489	Robinson-3	915	35	441	1,059	927	80 Gas, 920 feet
			Robinson-1	847	17	372	1,128	940	60 Gas, 938 feet
11 Harrington & Root	W. Lackey, No. 2	475	Robinson-3	912	40	437	1,063		30
12 Harrington & Root	W. Lackey, No. 4	490							No record
13 Harrington & Root	W. Lackey, No. 3	490							do
14 Harrington & Root	W. Lackey, No. 5	490							do
15 Harrington & Root	W. Lackey, No. 6	491							do
16 Harrington & Root	W. Lackey, No. 1	491	Robinson-1	890	18	399	1,101		13
1 Peoples Oil & Gas Co.	S. Johnson, No. 1	485	Robinson-4	1,040	11	555	945		Dry Salt water, 1,051 feet
2 Red Bank	J. Lackey, No. 2	492							No record
2 Red Bank	J. Lackey, No. 1	491	Stray	820	5	329	1,171		Gas, 820 feet
			Robinson-1	860	38	369	1,131		300
4 Wabash	J. Lackey, No. 1	490	do	868	28	478	1,022		
			Robinson-3	943	12	453	1,047		
5 Wabash	J. Lackey, No. 2	490	Robinson-1	864	26	374	1,126		
			Robinson-3	930	6	440	1,060		
6 Red Bank	J. Lackey, No. 2	487	Robinson-1	858	51	371	1,129	877	10
7 Red Bank	J. Lackey, No. 5	477	do	860	18	383	1,117		40
8 Red Bank	J. Lackey, No. 4	489	do	858	32	369	1,131	865	20
9 Red Bank	J. Lackey, No. 1	489	do	867	55	378	1,122	882	15
10 Wabash	Imboden, No. 2	466	Robinson-2	890	10	424	1,076		Gas, 867 feet
11 Wabash	Imboden, No. 1	471							Salt water
									Dry No record

10—

N. E..

N. W..

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face eleva-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
10— N. W..	12	Parker and Edwards	Harbison, No. 2	458	Robinson-1	824	16	366	1,134	829	.....	.....	.....
					Robinson-2	839	6	401	1,099	.....	.....	Dry	.....
					Robinson-3	890	.....	432	1,068	.....	.....	.....	.....
	13	Parker and Edwards	Harbison, No. 10	456	Stray	911	.....	453	1,047	947	.....	.....	.....
S. W..					Robinson-1	848	6	392	1,108	.....	.....	.....	.....
					Stray	765	.....	309	1,191	.....	.....	.....	.....
					do.	821	.....	365	1,135	.....	.....	.....	.....
					Robinson-1	838	19	382	1,118	.....	.....	.....	.....
					Robinson-2	870	.....	414	1,086	.....	.....	.....	.....
					Robinson-1	847	17	383	1,117	874	.....	.....	Well abandoned
	1	Ohio	Imboden, No. 1	464	Robinson-3	930	32	439	1,041	942	.....	.....	.....
	2	Ohio	Imboden, No. 2	471	do.	931	14	443	1,057	.....	.....	.....	.....
	3	Ohio	Imboden, No. 3	488	Stray	838	10	350	1,150	.....	.....	.....	.....
	4	Ohio	Imboden, No. 4	488	Robinson-2	883	10	395	1,105	.....	.....	.....	.....
					Robinson-3	942	29	454	1,046	.....	.....	10	.....
	5	Ohio	J. Lackey, No. 2	470	Robinson-3	868	14	398	1,102	.....	.....	.....	.....
					Robinson-2	925	30	455	1,045	.....	.....	.....	.....
	6	Ohio	J. Lackey, No. 5	487	Robinson-1	832	38	365	1,135	856	.....	120	Gas, 856 feet.
					Robinson-3	930	12	443	1,057	.....	.....	.....	.....
	7	Ohio	J. Lackey, No. 4	491	Robinson-1	839	26	398	1,134	.....	.....	.....	.....
					Robinson-3	944	30	453	1,047	.....	.....	.....	.....
	8	Ohio	J. Lackey, No. 1	490	Robinson-4	978	.....	487	1,013	.....	.....	.....	Salt water
	9	Ohio	J. Lackey, No. 3	487	Robinson-3	921	.....	431	1,069	932	.....	.....	Gas, 921 feet.
	10	Mahuska	Bond, No. 7	473	do.	938	29	451	1,049	.....	.....	.....	.....
					Robinson-1	845	12	372	1,128	.....	.....	.....	Quit in sand
	11	Mahuska	Bond, No. 9	488	Robinson-3	906	23	433	1,067	929	.....	.....	.....
					Robinson-1	863	36	375	1,125	.....	.....	150	Oil in slate, 949 to 954 feet
	12	Mahuska	Bond, No. 8	488	Robinson-3	923	31	435	1,065	.....	.....	.....	.....
					Robinson-1	890	12	402	1,098	.....	.....	.....	.....
	13	Mahuska	Bond, No. 1	492	Robinson-3	926	24	438	1,062	.....	.....	.....	.....
					do.	931	24	439	1,061	931	.....	150	Gas, 931 feet. Quit in sand

14	Mahutska.	Bond, No. 2.	490	Stray.....	826	12	336	1, 164	.....	Gas, 826 feet.
				Robinson-3	933	26	443	1, 057	933	150
				Robinson-4	1, 044	12	558	.....	1, 061	
15	Mahutska	Bond, No. 5.	490	Robinson-1	855	.....	365	1, 135	.....
16	Mahutska.	Bond, No. 3.	491	Robinson-3	926	31	436	1, 064	926	150
				do.....	928	33	437	1, 063	930	961
17	Mahutska	Bond, No. 4.	490	Robinson-1	878	.....	388	1, 112	.....	Quit in sand.
				Robinson-3	933	25	443	1, 057	.....	150
18	Mahutska.	Bond, No. 6.	490	Stray.....	803	7	313	1, 187	.....
				Robinson-3	925	22	435	1, 065	.....	150
1	Mahutska.	C. Shire, No. 5.	490	Robinson-1	855	20	365	1, 135	.....
2	Mahutska.	C. Shire, No. 4.	491	Robinson-3	945	20	455	1, 045	.....
				Robinson-1	845	5	354	1, 146	.....
3	Mahutska.	C. Shire, No. 3.	493	Robinson-2	931	24	440	1, 060	.....	150
				Robinson-1	842	8	349	1, 151	.....
4	Mahutska.	C. Shire, No. 1.	492	Robinson-3	930	35	437	1, 063	.....	150
				Robinson-1	861	32	369	1, 131	.....
5	Mahutska.	C. Shire, No. 6.	490	Robinson-3	930	33	438	1, 062	.....	150
				Robinson-1	855	18	365	1, 135	.....
6	Mahutska.	C. Shire, No. 7.	491	Robinson-3	940	27	450	1, 050	.....
				Robinson-1	843	24	352	1, 148	.....
7	Mahutska.	C. Shire, No. 2.	494	Robinson-3	931	20	340	1, 060	.....
				Robinson-1	850	10	356	1, 144	.....
8	Mahutska.	C. Shire, No. 8.	492	Robinson-3	931	21	437	1, 063	.....	150
				Robinson-1	837	33	345	1, 135	.....
9	Mahutska.	C. Shire, No. 9.	490	Robinson-3	940	25	448	1, 052	945	
				Robinson-1 (?)	826	39	336	1, 164	.....
10	Mahutska.	C. & J. Shire, No. 2.	483	Robinson-2	900	8	410	1, 090	.....	960
				Robinson-3	930	29	440	1, 060	.....
11	Mahutska.	C. & J. Shire, No. 1.	476	Robinson-1	841	10	358	1, 142	.....
				Robinson-3	941	24	458	1, 042	.....	972
12	Mahutska.	C. & J. Shire, No. 3.	490	Robinson-1	831	10	355	1, 145	.....
				Robinson-3	914	36	438	1, 062	.....	150
13	Mahutska.	C. & J. Shire, No. 8.	486	Robinson-1	868	10	378	1, 122	.....
				Robinson-3	930	26	440	1, 060	.....	250
14	Mahutska.	Taylor, No. 3.	490	Robinson-4	848	12	362	1, 138	.....	Salt water, 956 feet.
				Stray.....	971	27	485	1, 015	971	
15	Mahutska.	Taylor, No. 1.	491	Robinson-2	820	18	330	1, 170	.....	250
				Robinson-1	854	2	363	1, 137	.....	75
16	Mahutska.	Taylor, No. 4.	490	Robinson-3	930	26	439	1, 061	.....	Dry
				Robinson-1	846	12	356	1, 144	.....
17	Mahutska.	Taylor, No. 2.	492	Robinson-2	922	5	332	1, 068	.....
				Robinson-3	940	28	430	1, 050	953	75
18	Mahutska.	Taylor, No. 5.	479	Robinson-4	975	22	485	1, 015	.....
19	Mahutska.	Taylor, No. 6.	473	Stray.....	880	5	388	1, 112	.....
				Robinson-4	972	25	480	1, 020	.....	75
20	Mahutska.	Taylor, No. 4.	475	Robinson-3	935	.....	456	1, 044	940	Gas, 940 feet
				do.....	907	25	434	1, 066	912	Gas, 912 feet
				Robinson-4	960	.....	487	1, 013	.....	Salt water.
				Robinson-3	920	.....	445	1, 055	935	Gas, 924 feet

En

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
10—S. E.	21 Ohio.	Benedum & Trees.	Taylor, No. 2.	480	Stray.	803	.....	323	1,177	924	.....	100	Gas, 803 feet.
	22 Ohio.		Taylor, No. 7.	482	Robinson-3.	919	.....	439	1,061	930	.....	45	Gas, 930 feet.
	23 Ohio.		Taylor, No. 3.	487	Robinson-4.	962	.....	480	1,020	.....	.....	30	Salt water.
11—N. E.	1	Benedum & Trees.	York, No. 1.	506	Robinson-3.	927	.....	440	1,060	933	.....	.....	30 Gas, 933 feet.
	1		Meserve, No. 13.	493	Robinson-1.	916	28	410	1,090	938	.....	Gas	Gas, 920 feet. 2,000,000 cu. ft. gas.
	2		Meserve, No. 12.	501	Stray.	858	18	365	1,135	.....	.....	10	.....
N. W.	3 Ohio.	Benedum & Trees.	Meserve, No. 11.	479	Robinson-3.	961	.....	468	1,032	961	.....	.....	.....
	4 Ohio.		Meserve, No. 15.	503	Stray.	872	5	371	1,129	.....	.....	15	Gas, 954 feet.
	5 Ohio.		Meserve, No. 10.	495	Robinson-3.	930	17	449	1,051	954	.....	.....	.....
6 Ohio.	6 Ohio.	Benedum & Trees.	Meserve, No. 9.	479	Robinson-1.	860	6	381	1,119	.....	.....	12	Gas, 930 feet.
	7 Ohio.		Meserve, No. 4.	474	Robinson-3.	925	17	446	1,054	930	.....	18	.....
	8 Ohio.		Meserve, No. 3.	498	Robinson-3.	886	15	383	1,117	.....	.....	.....	.....
9 Ohio.	9 Ohio.	Benedum & Trees.	Meserve, No. 8.	504	Robinson-1.	952	14	449	1,051	.....	.....	40	Gas, 942 feet.
	10 Ohio.		Meserve, No. 7.	500	Robinson-3.	865	13	373	1,127	934	.....	12	Gas, 859 feet.
	11 Ohio.		Meserve, No. 6.	491	Robinson-1.	928	29	433	1,067	860	.....	150	Gas, 874 feet.
12 Ohio.	12 Ohio.	Benedum & Trees.	Meserve, No. 2.	499	Robinson-3.	858	12	379	1,121	894	.....	35	Gas, 874 feet.
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-1.	934	.....	460	1,040	934	.....	.....	.....
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-3.	870	.....	372	1,128	879	.....	.....	.....
13 C. E. Thomas.	13 C. E. Thomas.	Benedum & Trees.	Griswold, No. 2.	494	Robinson-3.	885	15	381	1,119	894	.....	15	Gas, 890 feet.
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-1.	889	10	389	1,111	905	.....	20	Gas, 902 feet.
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-3.	932	25	441	1,059	940	.....	.....	.....
13 C. E. Thomas.	13 C. E. Thomas.	Benedum & Trees.	Griswold, No. 2.	494	Robinson-4.	931	16	490	1,010	.....	.....	.....	.....
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-5.	1,020	.....	529	971	.....	.....	.....	.....
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-1.	876	.....	377	1,123	879	.....	120	Gas, 877 feet.
13 C. E. Thomas.	13 C. E. Thomas.	Benedum & Trees.	Griswold, No. 2.	494	Robinson-3.	940	15	441	1,059	.....	.....	.....	.....
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-4.	860	.....	366	1,134	.....	.....	.....	.....
	13 C. E. Thomas.		Griswold, No. 2.	494	Robinson-3.	939	.....	445	1,055	.....	969	.....	.....

S. W.	14 C. E. Thomas	Griswold, No. 4.	493	Robinson-1	845	352	1,148	352	1,148	985	.....
	15 C. E. Thomas	Griswold, No. 5	493	Robinson-3	940	447	1,053	447	1,053	985	.....
	16 C. E. Thomas	Griswold, No. 6	491	Robinson-1	850	357	1,143	357	1,143	967	.....
	17 C. E. Thomas	Griswold, No. 3	492	Robinson-3	930	364	1,136	364	1,136	967	.....
	18 C. E. Thomas	Griswold, No. 1	489	Robinson-1	860	439	1,061	439	1,061	970	.....
	1 Red Bank	Lemar, No. 2.	488	Robinson-3	935	443	1,057	443	1,057	970	.....
	2 Red Bank	Lemar, No. 8.	490	Robinson-3	845	356	1,144	356	1,144	988	.....
	3 Red Bank	Lemar, No. 3.	495	Robinson-1	868	449	1,051	449	1,051	988	.....
	4 Red Bank	Lemar, No. 7.	496	Robinson-3	939	451	1,049	451	1,049	988	.....
	5 Red Bank	Lemar, No. 5.	477	Robinson-3	870	34	350	34	350	1,120	.....
	6 Red Bank	Lemar, No. 4.	491	Robinson-1	863	16	368	16	368	1,132	.....
S. E.	7 Red Bank	Lemar, No. 6.	494	do.	922	6	427	6	427	1,073	.....
	8 Red Bank	Lemar, No. 1.	492	Robinson-1	877	47	381	47	381	1,119	.....
	9 Morrison	Lemar, No. 3.	500	Robinson-3	945	29	449	29	449	1,051	.....
	10 Morrison	Lemar, No. 4.	492	Robinson-1	869	12	453	12	453	1,047	.....
	11 Morrison	Lemar, No. 2.	498	Robinson-2	935	24	437	24	437	1,063	.....
	12 Morrison	Lemar, No. 1.	499	Robinson-2	918	419	1,081	419	1,081	950	.....
	13 Ohio	Newlin & Abbott, No. 6.	499	Robinson-4	883	384	1,116	384	1,116	984	.....
	14 Ohio	Newlin & Abbott, No. 4.	491	Robinson-1	884	15	485	15	485	1,015	.....
	15 Ohio	Newlin & Abbott, No. 8.	498	Robinson-1	886	57	395	57	395	1,103	.....
	16 Ohio	Newlin & Abbott, No. 7.	493	Robinson-3	940	10	442	10	442	1,058	.....
	17 Ohio	Newlin & Abbott, No. 1.	492	Robinson-1	885	16	455	16	455	1,045	.....
14— N. E.	18 Ohio	Newlin & Abbott, No. 3.	492	Robinson-1	885	28	393	28	393	1,107	.....
	19 Ohio	Newlin & Abbott, No. 2.	498	do.	887	31	389	31	389	1,111	.....
	20 Ohio	Newlin & Abbott, No. 3.	500	do.	899	27	399	27	399	1,101	.....
	1 Ohio	Meserve, No. 1.	498	do.	896	398	1,102	398	1,102	1,012	.....
	2 Ohio	Meserve, No. 5.	503	Robinson-2	938	435	1,065	435	1,065	944	.....
	3 Ohio	Meserve, No. 14.	508	do.	945	2	437	2	437	1,063	.....
	1 Ohio	J. Taylor, No. 4.	507	Robinson-1	912	24	405	24	405	1,095	.....
				Robinson-2	964	2	457	2	457	1,043	.....
				Robinson-4	1,020	.....	513	.....	987	.....	.....
										
										

S. W.

S. E.

14—

N. E.

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.	
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
2	Ohio.....	G. Taylor, No. 8.....	497	Robinson-3.....						961	29	464	1,036	.....	.....	100	Gas, 967 feet. Well abandoned.
14— N. E.... N. W....	3	Ohio.....	G. Taylor, No. 1.....	496	Robinson-1.....	892	.....	396	1,104	893	.....	.....	.....	Gas, 892 feet.
	1	Treat, Crawford & Treat.	Birch, No. 9.....	498	Stray.....	852	.....	354	1,146	.....	.....	25	.....	.....
	2	Treat, Crawford & Treat.	Birch, No. 8.....	499	Robinson-2.....	910	.....	402	1,098	900	.....	.....	.....	.....
	3	Treat, Crawford & Treat.	Birch, No. 8.....	499	Robinson-4.....	990	.....	411	1,089	.....	.....	Dry	.....	.....
	3	Treat, Crawford & Treat.	Birch, No. 7.....	500	Stray.....	852	.....	352	1,148	.....	.....	.....	.....	.....
	4	Treat, Crawford & Treat.	Birch, No. 7.....	500	Robinson-1.....	900	.....	400	1,100	900	.....	100	.....	.....
	4	Treat, Crawford & Treat.	Birch, No. 4.....	499	Robinson-2.....	930	20	430	1,070	930	.....	.....	.....	.....
	5	Treat, Crawford & Treat.	Birch, No. 4.....	499	Stray.....	858	.....	359	1,141	.....	.....	.....	.....	.....
	5	Treat, Crawford & Treat.	Birch, No. 3.....	500	Robinson-1.....	896	.....	387	1,113	886	.....	.....	.....	.....
	6	Treat, Crawford & Treat.	Birch, No. 3.....	500	Stray.....	858	.....	358	1,142	.....	.....	700	.....	.....
	6	Treat, Crawford & Treat.	Birch, No. 3.....	500	Robinson-1.....	895	12	395	1,105	895	.....	.....	.....	.....
7	Treat, Crawford & Treat.	Birch, No. 1.....	496	Robinson-2.....	930	20	430	1,070	930	.....	.....	.....	.....
7	Treat, Crawford & Treat.	Birch, No. 1.....	496	Stray.....	865	.....	369	1,131	.....	.....	.....	.....	The Stray sand in this vicinity varies from 3 to 7 feet in thickness.	
8	Treat, Crawford & Treat.	Birch, No. 2.....	485	Robinson-1.....	890	67	394	1,106	910	.....	.....	.....	.....	.....
8	Treat, Crawford & Treat.	Birch, No. 2.....	485	Stray.....	850	.....	365	1,135	.....	.....	.....	.....	.....	.....
9	Treat, Crawford & Treat.	Birch, No. 5.....	500	Robinson-1.....	867	79	382	1,118	914	.....	.....	750	.....	.....
9	Treat, Crawford & Treat.	Birch, No. 5.....	500	Stray.....	862	.....	362	1,138	.....	.....	.....	.....	.....	.....
10	Treat, Crawford & Treat.	Birch, No. 6.....	495	Robinson-1.....	880	.....	380	1,120	880	.....	.....	.....	.....	.....
10	Treat, Crawford & Treat.	Birch, No. 6.....	495	Robinson-2.....	918	30	418	1,082	918	.....	.....	700	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 10.....	499	Stray.....	869	.....	374	1,126	.....	.....	.....	.....	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 10.....	499	Robinson-1.....	880	.....	385	1,115	880	.....	.....	.....	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 10.....	499	Robinson-2.....	920	26	425	1,075	920	.....	.....	100	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 11.....	500	Stray.....	863	.....	364	1,136	.....	.....	.....	.....	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 11.....	500	Robinson-1.....	880	.....	381	1,119	880	.....	.....	50	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 11.....	500	do.....	875	.....	375	1,125	.....	.....	.....	.....	.....	.....
11	Treat, Crawford & Treat.	Birch, No. 11.....	500	Robinson-2.....	925	28	425	1,075	925	.....	.....	50	.....	.....

12	Treat, Crawford & Treat.	Birch, No. 12.	496	Robinson-1	896	400	1, 100	913	50	
13	Treat, Crawford & Treat.	Birch, No. 13.	495	Robinson-2	913	417	1, 083	913		
14	Red Bank	E. Miller, No. 1 "B"	495	Robinson-1	880	387	1, 113		100	
15	Wabash	E. Miller, No. 1	499	Robinson-3	925	16	432	925		
16	Wabash	E. Miller, No. 2	495	Robinson-2	860	33	361	1, 087		
17	Wabash	E. Miller, No. 3	498	Robinson-1	912	28	413		400	
18	Red Bank	E. Miller, No. 1 "RB"	486	Robinson-2	881	29	381	1, 087		
19	Ohio	E. Miller, No. 1	468	Robinson-2	881	20	430	1, 119		
20	Ohio	E. Miller, No. 2	496	Robinson-1	893	58	398	1, 102		
21	Ohio	E. Miller, No. 4	495	Robinson-2	893	58	398	1, 102		
22	Ohio	E. Miller, No. 6	496	Robinson-1	893	58	398	1, 102		
23	Ohio	E. Miller, No. 7	499	Robinson-2	890	10	404	1, 096		
24	Mahutska	P. Miller, No. 10	500	Robinson-2	924	39	438	1, 082		
25	Mahutska	P. Miller, No. 6	495	Robinson-2	894	25	426	1, 074		
26	Mahutska	P. Miller, No. 3	496	Robinson-1	894	30	399	1, 101		
27	Mahutska	P. Miller, No. 1	469	Robinson-2	885	41	389	1, 111	916	
28	Mahutska	P. Miller, No. 11	469	Robinson-1	885	41	389	1, 111		
1	Red Bank	J. Taylor, No. 1	485	Robinson-1	886	12	368	1, 132		
2	Red Bank	J. Taylor, No. 2	477	Robinson-3	886	28	401	1, 099	924	
3	Ohio	Hamilton, No. 1	487	Robinson-2	897	35	462	1, 038	967	
4	Ohio	Hamilton, No. 1	476	Robinson-2	870	12	374	1, 126		
5	Ohio	Hamilton, No. 6	484	Robinson-2	870	12	374	1, 126		
6	Ohio	Hamilton, No. 7	488	Robinson-2	870	12	374	1, 126		
7	Ohio	J. Taylor, No. 6	490	Robinson-2	895	24	426	1, 074	20	
8	Ohio	J. Taylor, No. 2	479	Robinson-2	895	24	426	1, 074		
1	Ohio	Hamilton, No. 5	501	Robinson-1	895	24	426	1, 074		
2	Ohio	Hamilton, No. 4	506	Robinson-2	902	32	433	1, 067		
3	Ohio	Hamilton, No. 2	511	Robinson-1	870	35	462	1, 038		
4	Ohio	P. Miller, No. 1	511	Robinson-3	870	35	462	1, 038		
5	Ohio	Hamilton, No. 3	506	Robinson-1	870	35	462	1, 038		
6	Ohio	Hamilton, No. 8	504	Robinson-2	883	32	404	1, 096		
7	Ohio	Hamilton, No. 9	507	Robinson-3	883	32	404	1, 096		
				Robinson-1	929	85	450	1, 050		
				Robinson-2	903	10	402	1, 080		
				Robinson-3	921	25	420	1, 080		
				Robinson-1	912	5	406	1, 094		
				Robinson-2	931	27	425	1, 070		
				Robinson-3	941	14	430	1, 070		
				Robinson-1	943	10	432	1, 068		
				Robinson-2	1, 001	39	496	1, 004		
				Robinson-3	1, 100	20	595	905		
				Robinson-1	1, 001	39	496	1, 004		
				Robinson-2	907	5	403	1, 097		
				Robinson-3	917	40	413	1, 087		
				Robinson-1	912	2	405	1, 095		
				Robinson-2	922	32	415	1, 085		
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						
				Robinson-1						
				Robinson-2						
				Robinson-3						

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
15— N. E...	1	Mahutska.....	J. Shire, No. 2.....	492 {	Robinson-1.....	864	11	372	1, 128				250	First productive well drilled in the Crawford county field.....
	2	Ohio.....	J. Shire, No. 1.....	464	Robinson-2.....	927	25	435	1, 065				250	
					Robinson-2.....	892	28	428	1, 072					
	3	Mahutska.....	J. Shire, No. 4.....	491	{ Stray.....	849	20	358	1, 142					
	4	Mahutska.....	J. Shire, No. 5.....	486	{ Stray.....	906	22	415	1, 085				250	
					Robinson-2.....	840	10	334	1, 146				250	
	5	Mahutska.....	J. Shire, No. 6.....	481	{ Robinson-1.....	902	25	416	1, 084					
					Robinson-2.....	844	12	363	1, 137				250	
					Stray.....	909	31	428	1, 072				250	
	6	Mahutska.....	J. Shire, No. 7.....	469	{ Robinson-2.....	822	10	353	1, 147				250	
					Robinson-2.....	883	26	414	1, 086				250	
					Robinson-1.....	836	46	350	1, 150				100	
	7	Red Bank.....	E. Miller, No. 4.....	486	{ Robinson-2.....	912	13	426	1, 074				300	
	8	Red Bank.....	E. Miller, No. 3.....	471	{ Robinson-2.....	822	49	351	1, 149				200	
	9	Red Bank.....	E. Miller, No. 2.....	477	{ Robinson-1.....	904	17	433	1, 067				200	
10	Ohio.....	E. Miller, No. 3.....	470	{ Robinson-1.....	843	29	366	1, 134					Gas, 880 feet.	
11	Ohio.....	E. Miller, No. 5.....	480	{ Robinson-2.....	908	25	431	1, 069						
12	Ohio.....	E. Miller, No. 8.....	486	{ Robinson-1.....	833	43	363	1, 137						
13	Mahutska.....	P. Miller, No. 7.....	488	{ Robinson-3.....	895	24	425	1, 075				16		
14	Mahutska.....	P. Miller, No. 5.....	478	{ Robinson-1.....	875	29	395	1, 105				200		
15	Mahutska.....	P. Miller, No. 4.....	488	{ Robinson-2.....	921	30	441	1, 059				20		

16	Mahutska.....	P. Miller, No. 2.....	489	Robinson-1.....	881	121	392	1, 108	.....	.....	200	.....
17	Mahutska.....	P. Miller, No. 8.....	486	Stray.....	917	22	428	1, 072	.....	.....	.....	.....
18	Mahutska.....	P. Miller, No. 9.....	490	Robinson-4.....	840	5	354	1, 116	840	.....	.....	.....
19	Mahutska.....	Walker, No. 2.....	482	Robinson-1.....	972	21	386	1, 014	.....	.....	.....	.....
20	Mahutska.....	Walker, No. 10.....	490	Robinson-3.....	885	20	396	1, 103	.....	.....	.....	.....
21	Mahutska.....	Walker, No. 9.....	471	Robinson-4.....	945	13	435	1, 045	950	.....	.....	.....
22	Mahutska.....	Walker, No. 12.....	466	Stray.....	974	7	484	1, 016	983	.....	.....	.....
23	Mahutska.....	Walker, No. 1.....	482	Robinson-3.....	825	.....	343	1, 157	.....	.....	.....	.....
24	Mahutska.....	Walker, No. 8.....	476	Robinson-2.....	923	31	441	1, 059	.....	.....	.....	.....
25	Mahutska.....	Walker, No. 7.....	487	Robinson-1.....	890	20	370	1, 130	.....	.....	.....	.....
26	Mahutska.....	Walker, No. 5.....	491	Robinson-2.....	917	19	427	1, 073	.....	.....	.....	.....
27	Mahutska.....	Walker, No. 6.....	491	Robinson-3.....	947	18	457	1, 043	.....	.....	.....	.....
28	Mahutska.....	Walker, No. 4.....	473	Robinson-1.....	862	6	391	1, 109	.....	.....	.....	.....
29	Mahutska.....	Walker, No. 3.....	467	Robinson-3.....	922	8	451	1, 040	.....	.....	.....	.....
30	Mahutska.....	Walker, No. 11.....	462	Robinson-4.....	948	28	477	1, 023	.....	.....	.....	.....
1	Ohio.....	Mann, No. 1.....	480	Robinson-1.....	850	20	384	1, 116	.....	.....	.....	.....
2	Ohio.....	Mann, No. 15.....	488	Robinson-3.....	925	25	459	1, 041	.....	.....	.....	.....
3	Ohio.....	Mann, No. 2.....	486	Robinson-4.....	963	14	497	1, 003	.....	.....	.....	.....
4	Ohio.....	Mann, No. 4.....	480	Stray.....	820	15	338	1, 162	.....	.....	.....	.....
5	Ohio.....	Mann, No. 19.....	485	Robinson-1.....	862	3	380	1, 120	.....	.....	.....	.....
6	Ohio.....	Mann, No. 3.....	488	Robinson-2.....	880	40	398	1, 102	901	.....	.....	.....
7	Ohio.....	Mann, No. 18.....	491	Stray.....	839	.....	363	1, 137	.....	.....	.....	.....
8	Ohio.....	Mann, No. 21.....	488	Robinson-3.....	850	.....	374	1, 126	.....	.....	.....	.....
				Robinson-1.....	875	25	399	1, 101	938	.....	.....	.....
				Robinson-2.....	1, 000	7	524	1, 070	.....	.....	.....	.....
				Robinson-3.....	926	20	439	1, 061	.....	.....	.....	.....
				Stray.....	806	18	315	1, 185	.....	.....	.....	.....
				Robinson-2.....	890	33	399	1, 101	895	.....	.....	.....
				Stray.....	839	15	348	1, 152	.....	.....	.....	.....
				Robinson-1.....	860	7	369	1, 131	.....	.....	.....	.....
				Robinson-4.....	995	23	504	1, 096	.....	.....	.....	.....
				Stray.....	807	.....	334	1, 166	.....	.....	.....	.....
				Robinson-3.....	940	24	467	1, 033	946	.....	.....	.....
				Robinson-1.....	825	12	358	1, 142	.....	.....	.....	.....
				Robinson-3.....	940	32	473	1, 027	946	.....	.....	.....
				Robinson-2.....	867	13	405	1, 095	.....	.....	.....	.....
				Robinson-3.....	923	7	461	1, 039	.....	.....	.....	.....
				Robinson-4.....	948	12	486	1, 014	.....	.....	.....	.....
				Stray.....	825	30	336	1, 164	.....	.....	.....	.....
				Robinson-2.....	926	14	437	1, 063	928	.....	.....	.....
				do.....	928	.....	441	1, 059	.....	.....	.....	.....
				do.....	928	.....	442	1, 058	930	.....	.....	.....
				Robinson-1.....	860	.....	374	1, 126	.....	.....	.....	.....
				Robinson-2.....	870	.....	432	1, 068	943	.....	.....	.....
				Robinson-3.....	870	5	385	1, 115	872	.....	.....	.....
				Robinson-1.....	935	26	450	1, 050	942	.....	.....	.....
				Robinson-3.....	930	.....	442	1, 058	935	.....	.....	.....
				Robinson-4.....	970	.....	482	1, 018	.....	.....	.....	.....
				Robinson-3.....	940	23	449	1, 051	945	.....	.....	.....
				Robinson-2.....	920	6	432	1, 068	.....	.....	.....	.....
				Robinson-3.....	932	341	444	1, 056	940	.....	.....	.....

Salt water.

Lenses 2 and 3 consolidated in this well.

Gas, 850 feet.

Gas, 825 feet.

Gas, 935 feet.

Gas, 860 feet.

Gas, 937 feet.

Salt water.

Gas, 942 feet.

Gas, 935 feet.

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet	Sand.				Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.						
15—N. W...	9 Ohio		Mann, No. 12.....	487	Robinson-3.....	927	.....	440	1,060	936	.....	.....	50	Gas, 930 feet.
	10 Ohio		Mann, No. 13.....	482	do.....	924	.....	442	1,058	930	.....	.....	50	Gas, 927 feet.
	11 Ohio		Mann, No. 25.....	492	do.....	940	.....	448	1,052	960	.....	.....	80	Gas, 945 feet.
	12 Ohio		Mann, No. 24.....	494	do.....	940	55	446	1,054	946	.....	.....	100	Gas, 940 feet.
	13 Ohio		Mann, No. 11.....	482	do.....	926	39	444	1,056	940	.....	.....	60	Gas, 930 feet.
	14 Ohio		Mann, No. 14.....	482	Robinson-2.....	910	45	428	1,072	920	.....	.....	80	Gas, 912 feet.
	15 Ohio		Mann, No. 23.....	467	do.....	898	22	431	1,069	910	.....	.....	120	Gas, 902 feet.
	16 Ohio		Ricker, No. 8.....	483	Robinson-1.....	869	28	386	1,114	875	.....	.....	.....	Gas, 870 feet.
	17 Ohio		Ricker, No. 7.....	480	Robinson-1.....	927	40	444	1,056	.....	.....	.....	.....	.....
	18 Ohio		Ricker, No. 2.....	480	Robinson-3.....	863	37	383	1,117	.....	.....	966	.....	.....
	19 Ohio		Ricker, No. 5.....	480	Robinson-2.....	931	32	451	1,049	.....	.....	954	.....	.....
	20 Ohio		Ricker, No. 9.....	482	do.....	912	36	436	1,064	.....	.....	960	.....	.....
	21 Ohio		Ricker, No. 3.....	482	Robinson-1.....	857	35	375	1,125	.....	.....	.....	.....	Gas, 917 feet.
	22 Ohio		Ricker, No. 4.....	482	Robinson-2.....	912	46	430	1,070	917	.....	.....	.....	.....
	23 Ohio		Ricker, No. 6.....	481	Robinson-1.....	867	33	385	1,115	.....	.....	960	.....	.....
	24 Ohio		Ricker, No. 1.....	480	Robinson-2.....	911	38	429	1,071	.....	.....	.....	.....	.....
	25 Red Bank		Ricker, No. 2 "R B".....	480	Robinson-3.....	931	29	449	1,051	931	.....	.....	.....	.....
	26 Ohio		Ricker, No. 3 "R B".....	481	Robinson-1.....	857	25	376	1,124	.....	.....	.....	.....	Gas, 919 feet.
	27 Wabash		Ricker, No. 2.....	486	Robinson-2.....	912	46	431	1,069	919	.....	.....	.....	.....
	28 Red Bank		Ricker, No. 2 "B".....	486	Robinson-1.....	855	10	375	1,125	.....	.....	993	25	.....
	29 Red Bank		Ricker, No. 3 "B".....	486	Robinson-2.....	916	26	436	1,064	.....	.....	.....	.....	.....
	30 Wabash		Ricker, No. 3.....	484	Robinson-3.....	849	8	369	1,131	.....	.....	.....	.....	.....
	31 Red Bank		Ricker, No. 4 "R B".....	485	Robinson-1.....	922	19	442	1,058	.....	.....	.....	30	.....
			Ricker, No. 3 "R B".....	481	Robinson-2.....	860	36	379	1,121	.....	.....	.....	.....	.....
			Ricker, No. 2.....	486	Robinson-1.....	903	.....	422	1,078	.....	.....	.....	.....	.....
			Ricker, No. 2.....	486	Robinson-2.....	923	34	437	1,063	.....	.....	.....	.....	.....
			Ricker, No. 3 "B".....	486	do.....	921	31	435	1,065	.....	.....	.....	.....	.....
			Ricker, No. 3.....	486	Robinson-1.....	862	30	376	1,124	.....	.....	.....	.....	.....
			Ricker, No. 3.....	484	Robinson-2.....	921	30	435	1,065	.....	.....	.....	.....	.....
			Ricker, No. 4 "R B".....	485	Robinson-3.....	927	29	443	1,057	.....	.....	.....	.....	.....
			Ricker, No. 4 "R B".....	485	Robinson-1.....	872	74	387	1,113	918	.....	.....	50	.....

32	Red Bank	Ricker, No. 1 "R B"	484	{ Robinson-1	865	10	381	1,119	.....	110
33	Wabash	Ricker, No. 1	485	Robinson-3	918	17	434	1,066	.....
34	Red Bank	Ricker, No. 1 "B"	486	do	925	25	440	1,060	.....
1	Lee	Basom, No. 1	478	Robinson-2	885	85	442	1,058	.....
2	Lee	Basom, No. 6	478	Robinson-3	933	32	455	1,043	885	970
3	Lee	Basom, No. 9	480	Robinson-2	908	.....	428	1,072	.....
4	Lee	Basom, No. 3	469	Robinson-4	921	20	441	1,059	.....
5	Lee	Basom, No. 8	475	Robinson-1	885	.....	416	1,084	.....
6	Lee	Basom, No. 10	478	Robinson-2	943	29	474	1,026	943	
7	Lee	Basom, No. 4	467	Robinson-3	847	13	372	1,128	.....	939
8	Lee	Basom, No. 2	468	Robinson-4	915	19	440	1,060	.....	952
9	Lee	Basom, No. 7	476	Robinson-1	902	25	424	1,076	.....	953
10	Lee	Basom, No. 5	481	Robinson-2	941	.....	435	1,065	.....	966
11	Benedum-Trees	Siler, No. 4	477	Robinson-3	838	23	370	1,130	.....	932
12	Lee	Siler, No. 11	475	Robinson-1	887	51	419	1,081	.....	928
13	Lee	Siler, No. 1	467	do	902	25	426	1,074	.....
14	North Fork	School House lot	467	Robinson-2	887	50	406	1,094	.....
15	Benedum-Trees	Siler, No. 3	466	do	882	46	405	1,065	894	928
16	Benedum-Trees	Siler, No. 2	469	do	884	.....	409	1,091	.....
17	McArthur	Weirick, No. 3	454	do	880	.....	413	1,087	890	912
18	McArthur	Weirick, No. 2	454	Robinson-1	890	30	423	1,077	895	920
19	McArthur	Weirick, No. 1	486	Robinson-2	880	.....	414	1,086	890	911
20	McArthur	Weirick, No. 6	487	do	822	32	853	647	.....
21	McArthur	Weirick, No. 5	455	do	873	.....	404	1,096	873	900
22	McArthur	Weirick, No. 4	470	do	850	50	396	1,104	.....	900
23	Ohio	Mann, No. 5	475	do	880	45	426	1,074	.....	935
24	Ohio	Mann, No. 6	460	do	860	45	373	1,127	.....	920
25	Ohio	Mann, No. 7	480	do	860	45	405	1,095	.....	917
26	Ohio	Mann, No. 16	465	do	873	43	403	1,097	.....	932
27	Ohio	Mann, No. 20	462	do	870	.....	395	1,105	893	30 Gas, 874 feet.
28	Ohio	Mann, No. 8	485	do	884	.....	400	1,100	862	50 Gas, 862 feet.
29	Ohio	Mann, No. 9	473	do	884	.....	404	1,096	892	300 Gas, 894 feet.
30	Ohio	Mann, No 17	463	do	873	47	408	1,092	900	100 Gas, 880 feet.
31	Ohio	Mann, No. 22	463	Robinson-1	829	8	367	1,133	.....	120 Gas, 872 feet.
32	Ohio	Mann, No. 10	485	Robinson-2	868	42	406	1,094	876	.....
1	Ohio	Wakefield, No. 5	488	do	904	.....	419	1,081	910	.....
2	Ohio	Wakefield, No. 2	483	Robinson-1	888	.....	415	1,085	896	.....
3	Ohio	Wakefield, No. 4	486	Robinson-2	864	10	401	1,099	.....	100 Gas, 890 feet.
4	Ohio	Wakefield, No. 11	483	do	888	32	425	1,075	894	.....
				do	891	30	428	1,072	895	100 Gas, 893 feet.
				do	911	.....	426	1,074	917	60 Gas, 915 feet.
				Robinson-1	920	.....	406	1,094	912	230 Gas, 900 feet.
				Robinson-2	887	.....	437	1,063	923	130 Gas, 928 feet.
				Robinson-1	918	20	401	1,099	890	10 Gas, 890 feet.
				Robinson-3	961	41	478	1,022	920	80 Gas, 922 feet.

S. W..

S. E..

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— S. E...	5 Ohio.....	Wakefield, No. 6.....	Wakefield, No. 8.....	488	Robinson-2.....	928	.....	440	1,060	938	.....	50 Gas, 933 feet.
	6 Ohio.....				Stray.....	817	.....	327	1,173	.....	.....	40 Gas, 920 feet.
	7 Ohio.....				Robinson-1.....	920	.....	430	1,070	.....	.....	150 Gas, 904 feet.
	8 Ohio.....				Robinson-2.....	868	2	388	1,112	.....	.....	Dry
	9 Ohio.....				Robinson-1.....	900	38	420	1,080	916	.....	60 Gas, 924 feet.
	10 Ohio.....				Robinson-2.....	884	.....	398	1,102	926	.....	100 Gas, 912 feet.
	11 Ohio.....				Robinson-3.....	919	29	430	1,070	916	.....	40 Gas, 913 feet.
	12 Ohio.....				do.....	907	24	442	1,058	913	.....	20
	13 Ohio.....				Robinson-1.....	906	28	440	1,060	907	.....	30
	14 Ohio.....				do.....	897	.....	407	1,093	908	.....	2
	15 Ohio.....				Robinson-1.....	903	.....	416	1,084	908	.....	2
	16 Ohio.....				Robinson-3.....	894	.....	398	1,102	896	.....	20 Gas, 944 feet.
16— N. E...	17 Ohio.....	Reed, No. 5.....	Reed, No. 6.....	486	Robinson-3.....	964	.....	468	1,032	964	.....	20 Gas, 944 feet.
	18 Ohio.....				Robinson-1.....	941	.....	448	1,052	946	.....	400
	19 Red Bank.....				do.....	887	.....	397	1,103	893	.....	20
	20 Red Bank.....				do.....	900	.....	410	1,090	903	.....	2
	21 Red Bank.....				Stray.....	907	.....	417	1,083	918	.....	Dry
	22 Red Bank.....				Robinson-1.....	856	14	368	1,132	.....	.....	25
	23 Red Bank.....				do.....	906	10	418	1,082	905	.....	.....
	24 Red Bank.....				Stray.....	890	48	405	1,095	.....	.....	.....
	25 Red Bank.....				Robinson-1.....	876	15	423	1,111	.....	.....	.....
	26 Red Bank.....				Robinson-2.....	910	5	423	1,077	.....	.....	.....
	27 Red Bank.....				Robinson-3.....	935	.....	448	1,052	.....	.....	.....
	28 Red Bank.....				Robinson-4.....	980	6	483	1,007	.....	.....	.....
	29 Red Bank.....				Robinson-3.....	1,013	10	526	974	.....	.....	.....

2 Mahutska.....	Bond, No. 15.....	476	{ Stray.....	382	10	356, 1, 144	957	356, 1, 144
3 Mahutska.....	Bond, No. 12.....	479	{ Robinson-3.....	924	26	448 1, 052		Gas, 850 feet
4 Mahutska.....	Bond, No. 14.....	466	{ Robinson-1.....	850		371 1, 129	150	
5 Mahutska.....	Bond, No. 10.....	480	{ Robinson-3.....	913	30	434 1, 066		
6 Mahutska.....	Bond, No. 11.....	473	{ Stray.....	825	21	359 1, 141	935	
7 Red Bank.....	Littlejohn, No. 1.....	461	{ Robinson-1.....	902	30	436 1, 064		
8 Ohio.....	Littlejohn, No. 3.....	478	{ Robinson-1.....	868	11	388 1, 112	150	
9 Ohio.....	Littlejohn, No. 1.....	476	{ Robinson-3.....	915	33	435 1, 065		
10 Ohio.....	Littlejohn, No. 2.....	479	{ Robinson-1.....	851	33	378 1, 122		
11 Mahutska.....	Mitchell, No. 10.....	474	{ Robinson-3.....	913	32	440 1, 060	920	
12 Mahutska.....	Mitchell, No. 8.....	474	{ Robinson-3.....	926	5	464 1, 036	975	Dry
13 Mahutska.....	Mitchell, No. 9.....	474	{ Robinson-1.....	860	5	382 1, 118		50
14 Mahutska.....	Mitchell, No. 7.....	479	{ Robinson-3.....	927	27	449 1, 051	932	Gas, 932 feet
15 Mahutska.....	Mitchell, No. 1.....	479	{ do.....	917	23	441 1, 059	919	
16 Mahutska.....	Mitchell, No. 2.....	482	{ Robinson-1.....	887	12	408 1, 092	939	
17 Mahutska.....	Mitchell, No. 12.....	478	{ Robinson-1.....	875	16	396 1, 104		250
18 Mahutska.....	Mitchell, No. 11.....	477	{ Robinson-2.....	850	17	376 1, 121		Gas, 850 feet
19 Mahutska.....	Mitchell, No. 5.....	477	{ Robinson-1.....	900	41	426 1, 074		250
20 Mahutska.....	Mitchell, No. 4.....	476	{ Robinson-1.....	835	39	361 1, 130		
21 Mahutska.....	Mitchell, No. 3.....	476	{ Robinson-2.....	855	39	372 1, 128		250
22 Mahutska.....	Mitchell, No. 6.....	477	{ Robinson-2.....	904	33	427 1, 073		250
1 Meford.....	Siler, No. 1.....	474	{ Robinson-1.....	851	6	372 1, 128		250
2 Meford.....	Siler, No. 2.....	475	{ Robinson-2.....	846	11	367 1, 133		Gas, 846 feet
3 Meford.....	Siler, No. 3.....	478	{ Robinson-2.....	891	41	412 1, 088	891	
4 Meford.....	Siler, No. 4.....	458	{ Robinson-3.....	850	12	368 1, 132		Gas, 850 feet
5 Meford.....	Siler, No. 5.....	469	{ Robinson-1.....	917	35	441 1, 059		
6 Meford.....	Siler, No. 6.....	474	{ Robinson-3.....	912	52	436 1, 064		
7 Ohio.....	Haskins, No. 1.....	466	{ Robinson-3.....	830	10	353 1, 147		
8 Ohio.....	Haskins, No. 2.....	465	{ Stray.....	920	42	446 1, 054	962	
			{ Robinson-3.....	912	46	435 1, 065		
			{ do.....	920	42	446 1, 054		
			{ Robinson-3.....	876	4	401 1, 090		
			{ Robinson-1.....	945	25	470 1, 090	973	
			{ Stray.....	853	38	375 1, 125	880	
			{ Robinson-1.....	904	17	426 1, 074	949	
			{ do.....	888		430 1, 070		
			{ Robinson-4.....	1, 012	5	555 945		Dry
			{ Stray.....	842		373 1, 127		Salt water
			{ Robinson-1.....	875	13	406 1, 094	917	
			{ Stray.....	851	22	377 1, 123		
			{ Robinson-1.....	888	12	414 1, 086		
			{ do.....	880		414 1, 086	885	2
			{ Stray.....	839	17	374 1, 126	842	30
								Gas, 880 feet, salt water, 890 feet
								Gas, 840 feet

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
16— N. W.	5	Red Bank.....	Dedrick, No. 7.....	467	Robinson-2.....	927	25	460	1,040	.....	.....	50	.....
	6	Red Bank.....	Dedrick, No. 9.....	468	Robinson-3.....	942	19	474	1,026	949	.....	75	.....
	7	Ohio.....	Dedrick, No. 8.....	468	do.....	951	15	483	1,017	951	.....	35	Gas, 952 feet.
	8	Ohio.....	Dedrick, No. 9.....	462	do.....	946	14	484	1,016	946	.....	90	Gas, 947 feet.
	9	Ohio.....	Dedrick, No. 7.....	465	Robinson-2.....	930	13	465	1,035	.....	.....	50	.....
	10	Red Bank.....	Dedrick, No. 10.....	460	Robinson-1.....	902	40	442	1,038	937	.....	50	.....
	11	Ohio.....	Dedrick, No. 6.....	463	Robinson-2.....	932	15	469	1,031	935	.....	.....	.....
	12	Ohio.....	Dedrick, No. 5.....	463	Robinson-3.....	960	7	463	1,003	.....	.....	.....	.....
	1	Ohio.....	Baldwin, No. 2.....	461	Robinson-2.....	926	7	463	1,037	927	.....	.....	.....
	2	Ohio.....	Baldwin, No. 1.....	456	do.....	952	11	475	1,025	.....	.....	30	.....
	3	Crescent.....	Baldwin, No. 7.....	461	Robinson-3.....	961	3	505	995	.....	.....	.....	.....
S. W..	4	Crescent.....	Baldwin, No. 5.....	460	Robinson-2.....	927	10	472	1,028	.....	.....	.....	.....
	5	Crescent.....	Baldwin, No. 1.....	445	Robinson-3.....	955	11	495	1,005	.....	.....	.....	.....
	6	Crescent.....	Baldwin, No. 3.....	445	Robinson-2.....	900	14	455	1,045	.....	.....	.....	.....
	7	Crescent.....	Baldwin, No. 4.....	445	Robinson-3.....	930	14	485	1,015	.....	.....	.....	.....
	8	Crescent.....	Baldwin, No. 6.....	445	Robinson-1.....	890	18	445	1,055	.....	.....	.....	.....
	1	Crescent.....	W. Mitchell, No. 1.....	447	Robinson-3.....	912	23	467	1,033	.....	.....	.....	.....
	2	Ohio.....	W. Mitchell, No. 2.....	447	Robinson-2.....	907	30	462	1,038	998	.....	.....	.....
	3	Ohio.....	J. Mitchell, No. 4.....	447	Robinson-1.....	914	.....	.....	.....	920	.....	.....	.....
	4	Ohio.....	J. Mitchell, No. 3.....	447	Robinson-3.....	939	13	.....	.....	.....	.....	.....	.....
	5	Campbell Bros. Murphy, No. 9.....	Murphy, No. 9.....	447	do.....	868	10	421	1,079	925	.....	.....	.....
	6	Campbell Bros. Murphy, No. 5.....	Murphy, No. 5.....	450	Robinson-2.....	882	12	431	1,065	.....	.....	.....	.....
S. E....	3	Ohio.....	J. Mitchell, No. 4.....	447	do.....	882	15	435	1,065	886	.....	.....	.....
	4	Ohio.....	J. Mitchell, No. 3.....	447	Robinson-4.....	1,007	.....	560	940	.....	.....	.....	.....
S. E....	5	Campbell Bros. Murphy, No. 9.....	Murphy, No. 9.....	447	Robinson-1.....	862	30	415	1,085	.....	.....	.....	.....
	6	Campbell Bros. Murphy, No. 5.....	Murphy, No. 5.....	450	Robinson-1 (?).....	846	53	396	1,104	.....	.....	.....	.....
S. E....	1	Crescent.....	W. Mitchell, No. 1.....	447	Robinson-2.....	907	30	462	1,038	998	.....	.....	.....
	2	Ohio.....	W. Mitchell, No. 2.....	447	do.....	868	10	421	1,079	925	.....	.....	.....
S. E....	3	Ohio.....	J. Mitchell, No. 4.....	447	do.....	882	15	435	1,065	886	.....	.....	.....
	4	Ohio.....	J. Mitchell, No. 3.....	447	Robinson-4.....	1,007	.....	560	940	.....	.....	.....	.....
S. E....	5	Campbell Bros. Murphy, No. 9.....	Murphy, No. 9.....	447	Robinson-1.....	862	30	415	1,085	.....	.....	.....	.....
	6	Campbell Bros. Murphy, No. 5.....	Murphy, No. 5.....	450	Robinson-1 (?).....	846	53	396	1,104	.....	.....	.....	.....

7 Campbell Bros.	463	Murphy, No. 3	Robinson	51	388	1,112	906	No record.
8 Campbell Bros.	463	Murphy, No. 6	Robinson-1 (?)	851	385	1,106	920	
9 Campbell Bros.	463	Murphy, No. 2	do	860	35			No record.
10 Campbell Bros.	468	Murphy, No. 4	Robinson-1 (?)	836	371	1,125	893	
11 Campbell Bros.	465	Murphy, No. 7	do	835	55	368	894	
12 Campbell Bros.	467	Murphy, No. 8	Robinson-1	879	431	1,069	890	No record.
13 Campbell Bros.	463	Murphy, No. 1	do					Salt water, 890 feet. Well abandoned.
14 Ohio.	448	McColpin, No. 4	do	880	433	1,067		75 Gas, 885 feet. Salt water, 900 feet.
15 Ohio.	447	McColpin, No. 3	do	890	442	1,055	892	100 Gas, 900 feet. Well abandoned.
16 Ohio.	448	McColpin, No. 1	do	897	449	1,051	900	Light Salt water.
17 Ohio.	448	McColpin, No. 2	Robinson-3	927	479	1,021		Salt water, 927 feet.
18 Ohio.	448	McColpin, No. 5	Robinson-4	1,040	592	908	1,040	Dry
1 Red Bank.	476	Dedrick, No. 5	Robinson-2	945	14	469	1,031	955
2 Red Bank.	478	Dedrick, No. 4	Robinson-3	958	18	480	1,020	964
3 Red Bank.	478	Dedrick, No. 1	Robinson-2	947	14	469	1,031	949
4 Red Bank.	472	Dedrick, No. 2	Robinson-3	947	16	475	1,025	10
5 Red Bank.	476	Dedrick, No. 6	Robinson-2	942	12	466	1,034	50
6 Red Bank.	475	Dedrick, No. 3	do	941	38	466	1,034	100
7 Morrison.	478	Perkins, No. 1	Stray	840	362	1,138		
8 Morrison.	476	Perkins, No. 2	Robinson-3	970	20	492	1,008	975
9 Morrison.	476	Perkins, No. 3	do	970	27	494	1,005	977
10 Morrison.	475	Perkins, No. 6	do	958	34	482	1,018	961
11 Morrison.	474	Perkins, No. 4	do	983	21	508	992	18
12 Morrison.	475	Perkins, No. 5	do	963	22	489	1,011	905
13 Ohio.	476	Dedrick, No. 4	do	971	23	496	1,004	
14 Ohio.	476	Dedrick, No. 3	do	988	8	512	988	996
15 Ohio.	473	Dedrick, No. 3	Robinson-2	950	35	476	1,024	985
16 Ohio.	472	Dedrick, No. 3	Robinson-3	985	513	987	985	130 Gas, 986 feet.
17 Ohio.	472	Dedrick, No. 6	do	990	18	518	982	990
18 Ohio.	474	Caywood, No. 1	do					7 Gas, 991 feet.
19 Ohio.	474	Cooley, No. 1	do	1,230	756	744		No record.
20 Ohio.	474	Cooley, No. 1	do					Dry Salt water, 1,230 feet. No upper sands.
21 Ohio.	472	Reade, No. 1	do	1,315	843	657		Dry No upper sands. Salt water, 1,315 feet.
22 Ohio.	472	School House Lot	Robinson-3	996	524	976	1,010	
23 Ohio.	469	Cooley, No. 2	Robinson-4	1,037	568	932		Dry No upper sands.
24 Ohio.	470	Dedrick, No. 1	do					No record.
25 Ohio.	465	Wirt, No. 1	Robinson-3	930	10	465	1,035	930
26 Ohio.	464	Wirt, No. 2	Robinson-1	865	12	401	1,099	865
27 Ohio.	466	Wirt, No. 1	do					60
28 Ohio.	468	Wirt, No. 3	Robinson-1	866	9	400	1,100	
29 Ohio.	468	Wirt, No. 4	Robinson-4	970	13	504	996	
30 Ohio.	463	Wirt, No. 1	do					75
31 Ohio.	463	Wirt, No. 2	Robinson-3	929	46	442	1,058	Dry No sands, all shale.
32 Ohio.	463	Wirt, No. 2	Robinson-1	869	28	406	1,094	Dry
33 Ohio.	462	Wirt, No. 3	Stray	849	14	387	1,113	849

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
31— S. E....	9	Ohio.....	Wirt, No. 4.....	462	Robinson-1.....	869	7	407	1,093	.....	25	.....
					Robinson-2.....	890	20	428	1,072	.....		.....
					Robinson-3.....	923	18	461	1,039	.....		.....
32— S. W....	1	Kanawha.....	Wood, No. 15.....	489	Robinson-1.....	865	15	376	1,121	935		
					Robinson-2.....	912		423	1,077	.....	
					Robinson-3.....	883	9	397	1,103	.....	
	2	Kanawha.....	Wood, No. 31.....	486	Robinson-1.....	918	27	432	1,068	952		
					Robinson-2.....	852	25	365	1,135	.....	
					Robinson-3.....	893	7	406	1,094	.....		Gas, 852 feet.
	3	Kanawha.....	Wood, No. 32.....	487	Robinson-1.....	918	18	431	1,069	943		
					Robinson-2.....	858	29	370	1,130	864		
					Robinson-3.....	905		417	1,083	932		
	4	Kanawha.....	Wood, No. 14.....	488	Robinson-1.....	858	10	374	1,126	.....	
					Robinson-2.....	904		420	1,080	929		
					do.....	882		408	1,092	894		
	6	Kanawha.....	Wood, No. 12.....	474	Robinson-1.....	863	9	387	1,114	.....	
					Robinson-2.....	874		396	1,103	911		
					do.....	865	15	385	1,115	875		
	8	Kanawha.....	Wood, No. 7.....	480	Robinson-1.....	846		362	1,138	860		
					do.....	903		419	1,081	919		
					Robinson-2.....	855	42	370	1,130	.....	
	10	Kanawha.....	Wood, No. 5.....	485	Robinson-1.....	919		434	1,066	944		
					Robinson-2.....	872	17	385	1,113	877		
					Robinson-3.....	901		414	1,086	938		Well abandoned.
S. E....	11	American Oil and Development Co.....	Wood, No. 10.....	487	Robinson-1.....	825		342	1,158	828		Shale gas, 650 feet.
					Robinson-2.....	835		390	1,110	873		
					Robinson-3.....	873				920		
	2	American Oil and Development Co.....	Short, No. 1.....	483	Robinson-1.....	863	57	375	1,125	881		Shale gas, 670 feet.
					Robinson-2.....	813	7	326	1,174	.....	
					Robinson-3.....	835	5	348	1,152	.....	
	3	American Oil and Development Co.....	Short, No. 20.....	487	Robinson-1.....	903	17	416	1,084	942		Salt water.

4	American Oil and Development Co.	Short, No. 19.	486	Robinson-1	842	14	356	1,144	845	230	Salt water.
				Robinson-2	898	5	412	1,088			
				Robinson-3	923	8	437	1,063	935		
5	American Oil and Development Co.	Short, No. 2.	478	Robinson-1	829	19	351	1,149	833		
				Robinson-2	868	18	390	1,110			Salt water.
				Robinson-4	955	4	477	1,023			
6	American Oil and Development Co.	Short, No. 18.	487	Robinson-1	830		433	1,157			
				Robinson-3	925	5	438	1,062	980		Dry
7	American Oil and Development Co.	Short, No. 17.	489	Robinson-1	838	32	369	1,131	885		200
8	American Oil and Development Co.	Short, No. 23.	484	do.	819	10	335	1,165			
				Robinson-2	904	8	420	1,080			100
9	American Oil and Development Co.	Short, No. 3.	468	Robinson-1	815	12	347	1,153			
				Robinson-2	837	15	389	1,111			
				Robinson-3	906		438	1,062	934		
10	American Oil and Development Co.	Short, No. 24.	489								No record.
11	American Oil and Development Co.	Short, No. 5.	468	Robinson-1	810	10	342	1,158			
		Railway right of way	489	Robinson-2	830	5	362	1,138			Dry
12		do.	490								No record.
13		do.	478								do.
14											do.
15	American Oil and Development Co.	Wall, No. 1.	483	Robinson-1	860	21	377	1,123	862		Shale gas, 585 and 750 feet
16	American Oil and Development Co.	Wall, No. 16.	488	do.	862	15	374	1,126	863	886	50
17	American Oil and Development Co.	Wall, No. 12.	488	do.	870	23	382	1,118	872		Shale gas, 670 feet.
18	American Oil and Development Co.	Wall, No. 11.	481	do.	845	2	364	1,136			Shale gas, 605 feet.
				Robinson-3	906	23	425	1,075	912	934	50
19	American Oil and Development Co.	Wall, No. 10.	482	Robinson-1	833	24	351	1,149			Shale, gas, 690 feet.
				Robinson-3	912	20	430	1,070			
20	American Oil and Development Co.	Wall, No. 13.	485	Robinson-1	870	25	385	1,115			Salt water, 885 feet.
				Robinson-3	912	22	427	1,073	917		75
21	American Oil and Development Co.	Wall, No. 2.	478	do.	904	19	426	1,074	907	928	Shale gas, 670 feet.
22	American Oil and Development Co.	Wall, No. 9.	489	Robinson-1	878	5	389	1,111			Shale gas, 625 feet.
				Robinson-2	904	20	415	1,085	909	929	75
23	American Oil and Development Co.	Wall, No. 3.	485	Robinson-1	863	32	378	1,122			
				Robinson-3	925	17	440	1,060	926	943	50
24	American Oil and Development Co.	Wall, No. 8.	488	do.	875	41	387	1,113	975	939	400

Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
32—S. E....	25	American Oil and Development Co....	Wall, No. 4.....	483	834	52	Robinson-1.....	351	1,149	871	920	100	
					895	20	Robinson-2.....	412	1,088				
	26	American Oil and Development Co....	Wall, No. 5.....	488	770	29	Shallow.....	282	1,218				
					836	24	Robinson-1.....	348	1,152				
					890	15	Robinson-2.....	402	1,098			200	
32—S. W....	27	American Oil and Development Co....	Wall, No. 6.....	489	830	15	Stray.....	341	1,159	834	935	400	
					850	45	Robinson-1.....	361	1,139	880			
	28	American Oil and Development Co....	Wall, No. 7.....	487	868	15	do.....	381	1,119			200	
					890	15	Robinson-2.....	403	1,097				
	29	American Oil and Development Co....	Wall, No. 17.....	483	855	6	Robinson-1.....	372	1,128	948	948	Dry	
33—S. W....	1	Fidelity.....	Davidson, No. 7.....	482									No record
	2	Fidelity.....	Davidson, No. 2.....	485									do.
	3	Fidelity.....	Davidson, No. 1.....	478									do.
	4	Fidelity.....	Davidson, No. 6.....	486									do.
	5	Fidelity.....	Davidson, No. 4.....	484									do.
	6	Fidelity.....	Davidson, No. 5.....	485									do.
	7	Fidelity.....	Davidson, No. 3.....	488									do.
	8	Liberty Oil and Gas Co....	Houghton, No. 4.....	484									do.
	9	Liberty Oil and Gas Co....	Houghton, No. 3.....	483									Shale gas, 615 feet.
	19	Liberty Oil and Gas Co....	Houghton, No. 2.....	479									125 Salt water, 864 feet.
	11	Liberty Oil and Gas Co....	Houghton, No. 12.....	486									200
	12	Liberty Oil and Gas Co....	Houghton, No. 1.....	486									936
					825	15	Robinson-1.....	339	1,161			No record	
					879	16	Robinson-2.....	393	1,107	879		Shale gas, 600 feet.	
					927	7	Robinson-3.....	441	1,059	930	944	Well abandoned because of fresh water.	

[illegible]

S. E.

34—S. F. ...

Crawford County—Oblong Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sun-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.		
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.						
35—S. W.	1	Ohio.....	Firebaugh, No. 4.....	512	Robinson-1.....	927	18	415	1,085	930	.....	15 Gas, 930 feet.....		
	2	Ohio.....	Firebaugh, No. 3.....	509	do.....	931	10	422	1,078	905	.....	10 Gas, 935 feet.....		
	3	Ohio.....	Firebaugh, No. 2.....	509	Robinson-2.....	946	13	437	1,063	950	.....	12 Gas, 950 feet. Salt water, 975 feet.....		
	4	Ohio.....	Firebaugh, No. 8.....	502	Robinson-1.....	923	10	421	1,079	930	.....	75 Gas, 925 feet.....		
	5	Ohio.....	Firebaugh, No. 7.....	503	do.....	920	15	417	1,083	925	.....	5 Gas, 925 feet. Salt water, 943 feet.....		
S. E.	6	Ohio.....	Firebaugh, No. 13.....	502	Robinson-3.....	960	15	458	1,042	970	.....	100	No record.....	
	1	Ohio.....	Warnock, No. 3.....	501	do.....					875	.....	do		
	2	Ohio.....	Warnock, No. 4.....	499	do.....					960	.....	do		
	3	Ohio.....	Warnock, No. 7.....	516	Robinson-2.....	950	18	434	1,066	960	.....	25 Gas, 950 feet.....		
	4	Ohio.....	Warnock, No. 8.....	514	do.....	941	15	427	1,073	945	.....	30 Gas, 941 feet.....		
	5	Ohio.....	Warnock, No. 2.....	490	do.....					896	.....	No record.....		
	6	Ohio.....	Warnock, No. 1.....	504	do.....					918	.....	do		
	7	Ohio.....	McLain, No. 2.....	488	do.....					928	.....	do		
	8	Ohio.....	McLain, No. 1.....	490	do.....					870	.....	do		
	9	Ohio.....	McLain, No. 4.....	507	do.....					910	.....	do		
	10	Ohio.....	McLain, No. 3.....	511	do.....					935	.....	do		
	11	Bailey & Fritz.....	Beeman, No. 2.....	488	Stray.....	870		382	1,118				do		
	12	Boles.....	Grievess, No. 1.....	504	Robinson-1.....	908	14	420	1,080	932	Salt water, 932 feet.....			
	13	Boles.....	McLain, No. 3.....	513	do.....	923	22	419	1,081	935	40 Gas, 923 feet.....			
	14	Boles.....	McLain, No. 1.....	513	Stray.....	890		377	1,123			100	Well abandoned.....		
					Robinson-1.....	936	27	423	1,077				do		
					Stray.....	885		372	1,128			15	5,000,000, cubic feet gas daily.....		
				Robinson-2.....	955	69	442	1,038				do			
15	Boles.....	McLain, No. 2.....	507	Stray.....	885		378	1,122			100	Gas, 877 feet.....			
16	Gillespie.....	Barnes, No. 2.....	504	Robinson-1.....	932	38	425	1,075				do			
17	Gillespie.....	Barnes, No. 3.....	509	Robinson-1.....	830	29	426	1,074				Gas, 898 feet.....			
				Stray.....	878	50	369	1,131				do			
				Robinson-1.....	938	18	429	1,071				do			

18 Bailey & Fritz.....	Beeman, No. 4.....	504	Stray.....	884	387	1,113	Dry No sands.....
19 Bailey & Fritz.....	Beeman, No. 3.....	507	Robinson-1.....	930	19	423 1,077	970
20 Bailey & Fritz.....	Beeman, No. 1.....	500	Stray.....	852	13	352 1,148	
			Robinson-1.....	913	87	413 1,087	922
							50 5,000,000 cubic feet gas daily.....

Crawford County—Robinson Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1— N. E...	1 Ohio.....		Walters, No. 7.....	520	Stray.....	900		380	1,120				
	2 Ohio.....		Walter, No. 8.....	519	Robinson-1.....	880	45	371	1,129			13	
	3 Ohio.....		Walters, No. 15.....	520	do.....	923	53	403	1,097	923			
	4 Ohio.....		Walters, No. 17.....	520	Stray.....	903	2	383	1,117				
	5 Ohio.....		Walters, No. 11.....	520	Robinson-3.....	1,022	68	502	998			Dry	Salt water, 1,022 feet.
	6 Ohio.....		Walters, No. 12.....	522	Stray.....	893	15	373	1,127				
	7 Ohio.....		Walters, No. 19.....	522	do.....	896	11	374	1,126				
N. W..	1 Ohio.....		Walters, No. 14.....	522	Robinson-3.....	912	6	390	1,110			Dry	
	2 Ohio.....		Jones, No. 8.....	511	Stray.....	900	6	378	1,102	903		30	Gas, 930 feet.
	3 Ohio.....		Jones, No. 9.....	511	do.....	932	5	421	1,081	930		4	Salt water, 942 feet.
	1 Ohio.....		Mikeworth, No. 1.....	505	Shallow.....	970	10	459	1,041	970		15	
	1 Leeper.....		Furman, No. 1.....	504	Robinson-1.....	903	20	205	1,205				Gas, 903 feet.
S. E...	2 Gunchen.....		Quick, No. 1.....	513	Robinson-3.....	1,005		398	1,102			Dry	Salt water, 1,005 feet.
	3 Chase.....		Quick, No. 2.....	507	Robinson-3.....	910		500	1,000			Dry	Salt water.
	4 Chase.....		Quick, No. 1.....	504	Stray.....	1,025		321	979			Light	Well abandoned.
						900		387	1,113	910		No record	do.

9	Red Bank	Cortelyou, No. 1 "B"	519	Stray	Robinson-1	881	362	1,138	Gas	Gas, 956 feet, 3,000,000 cubic feet gas.
						956	437	1,063		
10	Red Bank	Cortelyou, No. 2 "B"	519	Stray	Robinson-1	873	354	1,146		
						957	15	438		
11	Red Bank	Cortelyou, No. 1 "R. B"	520	Stray	Robinson-2	887	15	367	20	3,000,000 cubic feet gas.
						976	6	456	50	Show
12	Red Bank	Cortelyou, No. 2 "R. B"	522	Stray	Robinson-2	881	2	359	50	
						963	20	441		
13	Ohio	Cortelyou, No. 1	524	Stray	Robinson-2	903	20	379		
						966	18	442	912	
14	Ohio	Cortelyou, No. 4	521	Stray	Robinson-2					No record
										Gas, 893 feet.
15	Ohio	Cortelyou, No. 2	514	Stray	Robinson-4	893	20	379		
						1,057	10	543		
16	Ohio	Cortelyou, No. 3	517	Stray	Robinson-3	873	12	456		
						1,013				Salt water.
17	Leeper	Furman, No. 1	524	Stray	Robinson-4	1,062	15	496		
						898		374		
18	Leeper	Furman, No. 2	515							No record
19	Leeper	Furman, No. 3	518							do.
20	Leeper	Furman, No. 4	522	Stray	Robinson-1	920	10	398		
						958	30	436	1,000	No record
1	Davis	Dean, No. 1	514							Dry
2	Davis	Dean, No. 2	530							Dry
										Gas, 996 feet.
1	Leeper	C. Jones, No. 1	522	Robinson-2	Robinson-3	990	468	1,032	Dry	Salt water.
						1,017	495	1,005		
1	Davis	Dean, No. 2	530	Stray		910	5	380	Light	
2	Davis	Dean, No. 1	514	do		900	22	386	Light	
1	Ohio	G. Jones, No. 1	525	Robinson-3		1,016		491	Dry	Salt water.
1	Ohio	Griswold, No. 1	492	do		990	10	498	Dry	Salt water, 1,000 feet.
1	Unknown	Griswold, No. 1	498						Dry	No record
1	Unknown	Combs, No. 1	505						Dry	do
1	Central Oil & Gas Co.	Dean, No. 1	508	Robinson-1		905		397	Gas	Gas, 920 feet.
2	Central Oil & Gas Co.	Dean, No. 2	508	do		915	10	407	Light	Salt water, 962 feet. Well abandoned.
3	Ohio	W. Jones, No. 1	508	do		907		399	Gas	Gas, 933 feet.
1	Ohio	W. Jones, No. 2	509	do		912	12	403	20	Gas, 912 feet.
2	Ohio	W. Jones, No. 3	508	do		912		404	15	Gas, 935 feet.
3	Superior	Richart, No. 1	495						Dry	No record
4	Superior	Richart, No. 2	511	Robinson-1		916		405	75	Gas, 918 feet.
1	Jennings	Meserve, No. 1	511						Dry	No record
2	Ohio	Wakefield, No. 1	527	Stray	Robinson-2	898	6	371	Dry	Salt water.
						970		443		
1	Ohio	Wakefield, No. 2	522	Robinson-1		922	30	400		
						959	10	437	Robinson-2	
						982		460	Robinson-3	

Crawford County—Robinson Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
13— N. W..	2	Ohio	Wakefield, No. 3	524	Robinson-3	995		471	1,029			
	3	Ohio	Taylor, No. 5	520	do.	985	15	465	1,035			
	4	Ohio	Taylor, No. 3	520	Robinson-1	930	25	410	1,090			
	1	Morrison	Walter, No. 1	522	do.	929		407	1,093		Dry	Salt water.
S. W..	1	Morrison	Walter, No. 1	522	do.	1,233		711	789		9	Gas, 938 feet.
	2	Ohio	Mann, No. 1	517	Robinson-2	938		421	1,079	938		
16— N. E..	1	Red Bank	Rafferty, No. 1	533	Stray	910		377	1,123			Gas, 915 feet.
	1	Red Bank	Stephenson, No. 1	510	Robinson-3	1,037		504	996	1,037		Salt water.
17— N. E..	1	Red Bank	Stephenson, No. 1	510	Robinson-1 (?)	927	12	417	1,083	939	15	Well abandoned.
	1	Red Bank	Mann, No. 1	520	Stray	883		363	1,137			
18— S. W..	1	Samuels & Booth	F. Burner, No. 5	528	Robinson-2	972	12	444	1,056	974		North 40 acres.
	1	Samuels & Booth	F. Burner, No. 5	528	Robinson-3	1,030	15	502	998			Gas, 1,035 feet. North 40 acres.
S. W..	2	Samuels & Booth	F. Burner, No. 3	528	Robinson-3	1,235		707	793	1,238		Salt water. Well abandoned.
	2	Samuels & Booth	F. Burner, No. 3	528	Robinson-4	1,040	20	512	988			Gas, 1,040 feet. North 40 acres.
3 Unknown	3	Unknown	Ill. Central, No. 1	529	Robinson-3	1,120	15	592	908	1,120		
	4	Samuels & Booth	F. Burner, No. 2	530	Robinson-3	1,020	37	490	1,010	1,020		No record.
5 Samuels & Booth	5	Samuels & Booth	F. Burner, No. 4	530	Robinson-4	1,085	42	565	935			North 40 acres.
	5	Samuels & Booth	F. Burner, No. 4	530	Robinson-2	980	20	450	1,050	980		
6 Samuels & Booth	6	Samuels & Booth	F. Burner, No. 1	534	Robinson-4	1,107	33	577	923	1,140		North 40 acres.
	6	Samuels & Booth	F. Burner, No. 1	534	Stray	870	30	336	1,164	950		North 40 acres.
7 Samuels & Booth	7	Samuels & Booth	F. Burner, No. 1	532	Robinson-4	1,096	34	562	938	1,096		South 40 acres. Gas, 890 feet.
	7	Samuels & Booth	F. Burner, No. 1	532	Stray	888	17	356	1,144			
					Robinson-2	986	18	454	1,046	940	1,004	

8	Samuels & Booth	F. Burner, No. 2	532	{ Stray	917	385	1, 115	978	1, 006	Gas, 917 feet. South 40 acres.
				{ Robinson-2	978	446	1, 054	917		
9	Samuels & Booth	F. Burner, No. 3	529	{ Stray	917	388	1, 112	917		South 40 acres.
				{ Robinson-1	930	421	1, 079			Gas, 950 feet.
10	Vincent	Newlin, No. 9	521	{ Robinson-2	983	454	1, 046		1, 002	
				{ Stray	890	369	1, 131			
11	Vincent	Newlin, No. 8	522	{ do	905	384	1, 116	920	1, 006	
				{ Robinson-4	870	348	1, 152			
12	Vincent	Newlin, No. 5	530	{ Stray	1, 057	535	965			
				{ Robinson-2	885	355	1, 145			
13	Vincent	Newlin, No. 6	529	{ Robinson-4	968	438	1, 062		1, 082	
				{ Stray	914	385	1, 115		933	
14	Vincent	Newlin, No. 10	529	{ do	874	345	1, 155			
15	Vincent	Newlin, No. 11	522	{ Robinson-4	1, 040	511	989	1, 067	1, 081	
16	Vincent	Newlin, No. 7	526	{ do						No record
17	Vincent	Newlin, No. 3	526	{ Stray	800	364	1, 136		931	
				{ do	852	341	1, 159		895	
18	Vincent	Newlin, No. 1	511	{ do	876	365	1, 135		895	
19	Vincent	Newlin, No. 2	521	{ do	885	364	1, 136	940	984	
				{ do	860	343	1, 157			
20	Vincent	Newlin, No. 4	517	{ Robinson-3	979	462	1, 038		1, 086	Salt water.
				{ Robinson-4	1, 035	518	982			No record.
1	Unknown	F. Burner, No. 1	532	{ Robinson-1	956	423	1, 075	978		
2	Rogers	A. Burner, No. 1	531	{ Robinson-3	1, 027	496	1, 001		1, 192	Gas, 1,038 feet.
3	Rogers	A. Burner, No. 2	533	{ Robinson-3						No record
1	Annin	McGovern, No. 1	544	{ Robinson-3	1, 050	517	983		1, 400	do
2	Annin	McGovern, No. 2	533	{ Robinson-4	1, 105	572	928		1, 110	Gas, 1,050 feet.
1	Unknown	Jones	548	{ Robinson-1	1, 010	462	1, 038		1, 360	Salt water, 1,105 feet.
1	Ohio	Firebaugh, No. 4	494	{ Robinson-4	1, 015	521	979			Good gas, 1,020 feet. Well abandoned.
2	Ohio	Firebaugh, No. 5	487	{ Stray	860	373	1, 127			Salt water, 1,015 feet.
3	Ohio	Firebaugh, No. 2	484	{ Robinson-1	892	405	1, 095	894		Dry
				{ Stray	840	356	1, 144	845		Gas, 894 feet.
4	Ohio	Firebaugh, No. 3	513	{ Robinson-2	970	457	1, 043	980		Gas, 845 feet. Salt water, 862 feet.
5	Ohio	Firebaugh, No. 1	487	{ Stray	872	385	1, 115			15 Gas, 970 feet. Salt water, 986 feet.
6	Ohio	Walters, No. 4	505	{ Robinson-2	950	445	1, 055			75 Gas, 877 feet.
7	Ohio	Walters, No. 21	486	{ Stray	872	386	1, 114	872		60
8	Ohio	Walters, No. 1	486	{ Robinson-3	872	465	1, 035			
9	Ohio	Walter, No. 3	506	{ Robinson-1 (?)	872	386	1, 114			Dry
				{ do	872	366	1, 134			

S. E.

32— S. W.

33— S. W.

36— S. W.

Crawford County—Robinson Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— S. W.	10	Ohio.....	W. Jones, No. 2.....	506 {	Stray.....	888		382	1, 118	970		Gas, 985 feet. Salt water, 980 feet.....
					Robinson-3.....	970		464	1, 036			
	11	Ohio.....	W. Jones, No. 1.....	486 {	Stray.....	858		372	1, 128	953	15	
					Robinson-3.....	953		467	1, 033			
	12	Ohio.....	W. Jones, No. 7.....	513 {	Robinson-2.....	960	6	447	1, 053	960	20	
					W. Jones, No. 3.....	925		439	1, 061	932	60	Gas, 925 feet.....
	13	Ohio.....	W. Jones, No. 3.....	486 {	do.....	970		484	1, 016			Salt water.....
					Robinson-3.....	929	4	416	1, 084		60	Gas, 932 feet.....
	14	Ohio.....	W. Jones, No. 6.....	513 {	Robinson-1.....	940	21	427	1, 073	950		
					Robinson-2.....	932	6	419	1, 081			
	15	Ohio.....	W. Jones, No. 5.....	513 {	Robinson-2.....	949	12	436	1, 064	954	30	Gas, 949 feet.....
					Robinson-1.....	938		410	1, 090	900	75	Gas, 898 feet. Salt water, 922 feet.....
	16	Ohio.....	W. Jones, No. 4.....	488 {								No record.....
										890		do.....
	17	Ohio.....	Warnock, No. 3.....	486 {						896		do.....
										910		do.....
S. E.	18	Ohio.....	Warnock, No. 4.....	504 {								
	19	Ohio.....	Warnock, No. 2.....	488 {								
	20	Ohio.....	Warnock, No. 1.....	496 {								
	21	Ohio.....	Walters, No. 13.....	522 {	Stray.....	899	20	377	1, 123	901	75	Salt water, 929 feet.....
					do.....	887	15	365	1, 135			No record.....
	1	Ohio.....	Walters, No. 2.....	522 {								
	2	Ohio.....	Walters, No. 10.....	520 {								
	3	Ohio.....	Walters, No. 5.....	522 {	Robinson-1.....	940	25	418	1, 082			
	4	Ohio.....	Walters, No. 16.....	505 {	Stray.....	865	15	360	1, 140			
	5	Ohio.....	Walters, No. 9.....	522 {	Robinson-1 (?).....	900	12	395	1, 105	900	40	
	6	Ohio.....	Walters, No. 20.....	526 {	Stray.....	887	15	365	1, 135			
	7	Ohio.....	Walters, No. 18.....	503 {	Robinson-2.....	973	10	447	1, 053	973	20	Salt water, 986 feet.....
	8	Ohio.....	Walters, No. 18.....	503 {	Stray.....	874	26	371	1, 129	874	60	
					do.....	877	7	359	1, 141			
	9	Ohio.....	Walters, No. 23.....	518 {								
					Robinson-1.....	945	22	427	1, 073	947	8	
					Stray.....	895	7	374	1, 126			Gas, 898 feet.....
					Robinson-2.....	954	16	433	1, 067	954	20	

10	Ohio.....	Walters, No. 6.....	507	{ Robinson-1 Robinson-3 Stray.....	900	395 883 362	1,105 1,017 1,138	1,148	.....	Gas, 920 feet Salt water.....
11	Leeper.....	Crebbs, No. 1.....	521	{ Robinson-4 Stray.....	883 1,080	7 10	565 935	1,102	.....	.....
12	Leeper.....	Crebbs, No. 3.....	524	{ Robinson-1 Stray.....	930 875	19	406 1,094	.....	.....	.....
13	Leeper.....	Crebbs, No. 4.....	526	{ do Stray.....	874 883	16	348 1,152	1,160	.....	.....
14	Leeper.....	Crebbs, No. 9.....	524	{ Robinson-2 Robinson-4 Stray.....	960 1,069 1,188	22 18 25	436 955 664	.....	.....	Salt water, 1,213 feet.
15	Leeper.....	Crebbs, No. 2.....	525	{ Robinson-4 Stray.....	878 1,086	14	353 939	1,213	.....	Quit in sand.
16	Leeper.....	Crebbs, No. 8.....	511	{ do do do	846 881 900	10 9 19	561 1,165 370	1,069	.....	.....
17	Leeper.....	Crebbs, No. 5.....	526	{ Robinson-3 Stray.....	874 900	16 10	389 1,111	942	.....	.....
18	Leeper.....	Crebbs, No. 7.....	506	{ do do	838 870	22	332 1,168	1,002	.....	.....
19	Leeper.....	Crebbs, No. 6.....	486	{ Robinson-1 Stray.....	851 889	15	364 1,136	930	.....	.....

Lawrence County—Bridgeport Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.		Altitude above datum plane—feet.				
1	N. E...	1 Snowden Bros.....	E. Fyffe, No. 2.....	528				Kirkwood.....	1,644		34	1,116	384	1,644	1,678	Salt water, 870 feet.....
					Bridgeport.....	1,870		346	1,154				Salt water, 1,360 feet.....	
					Buchanan.....	1,360		836	664				Salt water, 1,475 feet.....	
					"Gas".....	1,475		951	549				Salt water, 1,608 feet.....	
					Kirkwood-1.....	1,668		1,144	356					
					Kirkwood-2.....	1,682	19	1,158	342	1,682				
					Kirkwood-3.....	1,712	15	1,188	312		1,727	65		
2	Snowden Bros.....	E. Fyffe, No. 5.....		524										

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1—	N. E.	3 Bridgeport.....	Klinger, No. 1.....	530	Bridgeport.....	840	20	310	1,190			Salt water, 840 feet.....
					do.....	930	30	400	1,100			Salt water, 930 feet.....
					Bridgeport and Buchanan.....	1,040	314	510	990			
					"Gas".....	1,480	15	950	550			
					Stray.....	1,535	5	1,005	495			
5—	S. E.	4 Snowden Bros.....	E. Fyfe.....	520	Kirkwood.....	1,723	17	1,193	307			
					Bridgeport.....	790	30	270	1,230	1,740	40	
					do.....	1,110	130	590	910			
					Stray.....	1,275	25	755	745			Salt water, 1,145 feet.....
					Buchanan-1.....	1,345	25	825	675			
					Buchanan-2.....	1,440	23	920	580			Salt water, 1,440 feet.....
					Stray.....	1,567	12	1,047	433			Salt water, 1,567 feet.....
					Kirkwood.....	1,633	24	1,113	387	1,641		
					do.....	1,657	52	1,142	358	1,662	75	
					Bridgeport.....	1,115	60	598	402			
5—	N. E.	3 Ohio.....	J. Lewis, No. 1.....	461	Kirkwood.....	1,659	20	1,142	338	1,659	100	
					do.....	1,669	30	1,155	345	1,670	65	
					Lake No. 1.....	1,705	20	1,191	309			
					McClosky.....	1,942	5	1,428	72	1,942		Salt water, 1,947 feet.....
					Kirkwood.....	1,690	29	1,176	321	1,700	72	
					do.....	1,689	20	1,177	323	1,690	30	Gas, 1,700 feet.....
					do.....	1,412	70	951	549	1,437	100	Gas, 1,437 feet.....
					J. Lewis, No. 4.....	1,420	20	964	536	1,445		
					J. Lewis, No. 5.....	456						
					Bridgeport.....	1,040	12	578	922			
5—	N. E.	3 Ohio.....	J. Lewis, No. 13.....	462	Kirkwood.....	1,426	12	964	536	1,426	45	Gas, 1,426 feet.....
					do.....	895	35	441	1,059	933		
					Bridgeport-2.....	780	15	321	1,179			
					Bridgeport-1.....	895	25	436	1,061	920		
					Bridgeport-2.....	895						

6 Ohio.	J. Lewis, No. 8.	472	Bridgeport-1.	788	8	316	1,184	.....	.....	.....	.....	.....	.....
7 Ohio.	J. Lewis, No. 10.	481	do.	795	30	323	1,177	.....	930	.....	.....	.....	.....
8 Ohio.	J. Lewis, No. 9.	486	Bridgeport-1.	805	40	414	1,086	.....	.....	.....	.....	.....	.....
9 Ohio.	Eshelman, No. 9.	500	Bridgeport-2.	810	10	324	1,176	.....	.....	.....	.....	.....	.....
10 Ohio.	Eshelman, No. 6.	496	Bridgeport-3.	885	5	399	1,101	.....	.....	.....	.....	.....	.....
11 Ohio.	Eshelman, No. 5.	493	do.	926	38	409	1,091	.....	933	.....	.....	.....	.....
12 Ohio.	Eshelman, No. 1.	470	Kirkwood	1,428	10	426	1,074	.....	140	.....	.....	.....	.....
13 Ohio.	Eshelman, No. 4.	490	Stray	1,612	8	432	568	.....	.....	.....	.....	.....	.....
14 Ohio.	Eshelman, No. 3.	484	Bridgeport-1.	1,787	10	1,116	384	.....	.....	.....	.....	.....	.....
15 Ohio.	Eshelman, No. 2.	493	Bridgeport-2.	805	200	294	1,206	.....	1,736	.....	.....	.....	.....
16 Ohio.	Eshelman, No. 7.	478	do.	815	10	325	1,175	.....	.....	.....	.....	.....	.....
17 Ohio.	Eshelman, No. 8.	465	Bridgeport-1.	790	13	306	1,194	.....	.....	.....	.....	.....	.....
18 Ohio.	Eshelman, No. 10.	465	Bridgeport-2.	891	14	407	1,093	.....	.....	.....	.....	.....	.....
1 Ohio.	Cooper, No. 11.	495	Bridgeport-3.	1,035	15	551	949	.....	.....	.....	.....	.....	.....
2 Ohio.	Cooper, No. 7.	509	Gas	1,300	10	816	684	.....	1,310	.....	.....	.....	.....
3 Ohio.	Cooper, No. 14.	498	Bridgeport-1.	795	33	302	1,198	.....	.....	.....	.....	.....	.....
4 Ohio.	Cooper, No. 16.	500	Bridgeport-2.	865	10	372	1,128	.....	.....	.....	.....	.....	.....
5 Ohio.	Cooper, No. 17.	492	Bridgeport-3.	880	46	388	1,112	.....	.....	.....	.....	.....	.....
6 Ohio.	Cooper, No. 18.	495	Bridgeport-1.	821	34	426	1,020	.....	.....	.....	.....	.....	.....
7 Ohio.	Cooper, No. 8.	522	Bridgeport-2.	988	43	325	1,174	.....	.....	.....	.....	.....	.....
8 Ohio.	Cooper, No. 5.	521	Bridgeport-1.	915	113	393	1,107	.....	.....	.....	.....	.....	.....
9 Ohio.	Cooper No. 25.	508	Bridgeport-2.	800	20	279	1,221	.....	.....	.....	.....	.....	.....
10 Ohio.	Cooper, No. 1.	507	Bridgeport-3.	838	5	317	1,183	.....	.....	.....	.....	.....	.....
11 Ohio.	McElfresh, No. 11.	507	Gas	1,375	36	381	1,119	.....	.....	.....	.....	.....	.....
12 Ohio.	McElfresh, No. 12.	504	Bridgeport-1.	1,377	33	370	1,130	.....	.....	.....	.....	.....	.....
13 Ohio.	McElfresh, No. 3.	519	do.	945	.....	438	1,062	.....	.....	.....	.....	.....	.....
			Gas	1,310	32	806	694	.....	.....	.....	.....	.....	.....
			Kirkwood	1,356	9	882	618	.....	.....	.....	.....	.....	.....
			Bridgeport-1.	1,842	18	323	1,177	.....	.....	.....	.....	.....	.....
			Bridgeport-3.	1,035	25	516	984	.....	.....	.....	.....	.....	.....

N. W..

Originally a gas well.

No record.

Well abandoned.

Show

Show

Show

Good

200

Best production.

1,000

1,000

1,007

1,060

580

1,394

60

700

Gas, 1,005 feet.

75

125

100

150

100

50

80

Salt water, 965 feet.

170

125

1,400

1,424

Dry

50

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Name.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.												
5— N. W.	14	Ohio.....	McElfresh, No. 2.....	513	925	22	412	1,088	.....	Bridgeport-2.....	925	412	1,088	.....	.....	.....	.....
	15	Ohio.....	McElfresh, No. 4.....	520	1,030	20	517	1,983	.....	Bridgeport-3.....	1,030	517	1,983	.....	1,055	.....	.....
	16	Ohio.....	McElfresh, No. 1.....	503	982	12	462	1,038	.....	Bridgeport.....	982	462	1,038	.....	1,062	.....	.....
	17	Ohio.....	McElfresh, No. 18.....	519	1,033	27	513	1,987	.....	do.....	1,033	513	1,987	.....	.....	.....	.....
	18	Ohio.....	McElfresh, No. 6.....	520	820	22	317	1,183	.....	Bridgeport-1.....	820	317	1,183	.....	1,040	.....	.....
	19	Ohio.....	McElfresh, No. 14.....	530	915	21	412	1,088	.....	Bridgeport-2.....	915	412	1,088	.....	.....	.....	.....
	20	Ohio.....	McElfresh, No. 10.....	520	1,150	20	631	869	.....	Stray.....	1,150	631	869	.....	.....	.....	.....
	21	Ohio.....	McElfresh, No. 16.....	506	1,413	33	894	606	.....	Kirkwood.....	1,413	894	606	.....	1,466	35	Gas, 1,420 feet.....
	22	Ohio.....	McElfresh, No. 5.....	505	834	21	305	1,195	.....	Bridgeport-1.....	834	305	1,195	.....	.....	.....	.....
	23	Ohio.....	Cooper, No. 19.....	504	905	.....	476	1,024	.....	Bridgeport-2.....	905	476	1,024	.....	.....	.....	.....
	24	Ohio.....	Cooper, No. 26.....	503	965	20	436	1,064	.....	Bridgeport-3.....	965	436	1,064	.....	.....	.....	.....
	25	Ohio.....	Cooper, No. 13.....	506	1,340	.....	811	680	.....	do.....	1,340	811	680	.....	.....	.....	.....
	26	Ohio.....	Cooper, No. 9.....	507	1,432	13	903	597	.....	Kirkwood.....	1,432	903	597	.....	.....	.....	.....
	27	Ohio.....	Cooper, No. 21.....	487	1,433	6	903	597	.....	McClusky.....	1,433	903	597	.....	1,736	50	Gas, 1,673 feet.....
	28	Ohio.....	Cooper, No. 22.....	478	1,883	12	153	347	.....	Bridgeport-2.....	1,883	153	347	.....	1,883	.....	.....
	29	Ohio.....	Cooper, No. 24.....	475	882	90	372	1,128	.....	Tracy.....	882	372	1,128	.....	.....	.....	.....
	30	Ohio.....	Cooper, No. 23.....	474	1,820	30	1,014	486	.....	McClusky.....	1,820	30	1,014	.....	1,668	70	Gas, 1,675 feet.....
	31	Ohio.....	Cooper, No. 20.....	484	1,665	50	397	1,103	.....	Bridgeport-2.....	1,665	397	1,103	.....	1,038	75	.....
S. W.	32	Ohio.....	Cooper, No. 12.....	489	902	50	397	1,103	.....	do.....	902	397	1,103	.....	918	.....	.....
	33	Ohio.....	Cooper, No. 12.....	489	915	53	411	1,089	.....	Kirkwood.....	915	411	1,089	.....	.....	.....	.....
	34	Ohio.....	Cooper, No. 12.....	489	1,410	30	907	593	.....	McClusky.....	1,410	907	593	.....	1,663	800	Gas, 1,649 feet.....
	35	Ohio.....	Cooper, No. 12.....	489	1,550	13	147	353	.....	Bridgeport-1.....	1,550	147	353	.....	.....	.....	.....
	36	Ohio.....	Cooper, No. 12.....	489	810	35	304	1,196	.....	Bridgeport-3.....	810	35	304	.....	1,030	75	.....

6 Ohio.	Newell, No. 10.	499	do.	Bridgeport-3	896	14	397	1,103	933	972	75	397	1,103	933	972	75
7 Ohio.	Newell, No. 12.	507	do.	Bridgeport-3	930	42	431	1,069	933	990	100	431	1,069	933	990	100
8 Henley, Watson, et al.	School House Lot, No. 1.	521		Bridgeport-3	989	23	471	1,029	994	1,012	150	471	1,029	994	1,012	150
9 Henley, Watson, et al.	School House Lot, No. 2.	520		do.	1,494	31	468	1,032	979	1,010	100	468	1,032	979	1,010	100
10 Ohio.	J. King, No. 26.	518		Kirkwood.	1,733	12	226	575	1,745	1,793	90	226	575	1,745	1,793	90
11 Ohio.	Newell, No. 11.	511		McClosky.	777	19	285	1,215	931			285	1,215			
12 Ohio.	Newell, No. 13.	508		Bridgeport-1	810	121	318	1,182				318	1,182			
13 Ohio.	Newell, No. 3.	492		Bridgeport-2	770	52	303	1,197				303	1,197			
14 Ohio.	Newell, No. 1.	467		Bridgeport-1	847	95	380	1,120	869	912		380	1,120	869	912	
15 Ohio.	Newell, No. 2.	456		do.	834	32	378	1,122				378	1,122			
16 Ohio.	Newell, No. 4.	468		Bridgeport-3	980	10	474	1,026	930	959		474	1,026	930	959	
17 Ohio.	Newell, No. 5.	462		Bridgeport-1	789	66	384	1,116	890	918		384	1,116	890	918	
18 Ohio.	Newell, No. 6.	469		Bridgeport-2	800	40	338	1,162				338	1,162			
19 Ohio.	Newell, No. 7.	459		Bridgeport-1	887	55	425	1,075	900	942		425	1,075	900	942	
20 Ohio.	Newell, No. 8.	462		do.	892	21	373	1,127	852	900		373	1,127	852	900	
21 Ohio.	Newell, No. 9.	482		Bridgeport-2	777	13	318	1,182				318	1,182			
22 Ohio.	Cooper, No. 6.	470		Bridgeport-1	823	47	364	1,136				364	1,136			
23 Ohio.	Cooper, No. 4.	467		Bridgeport-2	788	30	326	1,174				326	1,174			
24 Ohio.	Cooper, No. 3.	476		Bridgeport-1	785	44	433	1,067	900	939		433	1,067	900	939	
25 Ohio.	Cooper, No. 2.	477		Bridgeport-2	889	51	407	1,093	890	940	50	407	1,093	890	940	50
26 Ohio.	Cooper, No. 10.	487		do.	906	46	436	1,064	915	952	50	436	1,064	915	952	50
27 Ohio.	Cooper, No. 15.	502		Bridgeport-1	796	16	320	1,180	796			320	1,180	796		
1 Ohio.	Robbins, No. 1.	475		Bridgeport-2	863	11	386	1,113	859	1,038	50	386	1,113	859	1,038	50
2 Ohio.	Robbins, No. 7.	495		Buchanan.	1,180	16	703	797	1,180	1,196	50	703	797	1,180	1,196	50
3 Ohio.	Robbins, No. 5.	492		Bridgeport-1	806	20	319	1,181				319	1,181			
4 Ohio.	Robbins, No. 11.	484		Bridgeport-3	830	15	328	1,172	925	977	40	328	1,172	925	977	40
5 Ohio.	Robbins, No. 13.	504		Kirkwood.	1,427	23	925	575	1,431	1,450	50	925	575	1,431	1,450	50
6 Ohio.	Robbins, No. 10.	480		Bridgeport-1	800	25	325	1,175	805			325	1,175	805		
7 Ohio.	Robbins, No. 12.	480		Bridgeport-2	892	34	417	1,083	895	926	40	417	1,083	895	926	40
8 Ohio.	Robbins, No. 2.	477		Bridgeport-1	820	40	325	1,175				325	1,175			
9 Ohio.	Robbins, No. 3.	481		Bridgeport-2	879	71	384	1,116	885	950	150	384	1,116	885	950	150
10 Ohio.	Robbins, No. 12.	485		Bridgeport-1	840	30	348	1,152				348	1,152			
				Bridgeport-2	897	54	405	1,095	914	951	125	405	1,095	914	951	125
				Bridgeport-3	820	135	336	1,164	895	955	125	336	1,164	895	955	125
				Bridgeport-1	910	53	406	1,094	930	963	65	406	1,094	930	963	65
				Bridgeport-2	842	119	336	1,164	842	961	68	336	1,164	842	961	68
				Bridgeport-1	820	133	340	1,160	895	953	65	340	1,160	895	953	65
				do.	795	33	318	1,182	920			318	1,182	920		
				Bridgeport-2	875	33	398	1,102	915	928	75	398	1,102	915	928	75
				Bridgeport-1	800	20	319	1,181				319	1,181			
				Bridgeport-3	905	59	424	1,076	910	964	100	424	1,076	910	964	100
				do.	893	61	408	1,092	893	954	60	408	1,092	893	954	60

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.						Initial product—barrels.	Remarks.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.			Total depth—feet.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
5—																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S. E...	11	Ohio.....	Robbins, No. 4.....	489	{	Bridgeport-1.....	801	24	312	1,188</

4	Snowden Bros.	Cummings, No. 11.	519	Bridgeport.....	790	18	271	1,229	.....	.....	.....
				do.....	835	20	316	1,134	.....	Show	.....
				do.....	930	40	411	1,089	.....	Show	.....
				do.....	980	15	461	1,039	.....	.....	Salt water, 995 feet.....
				Bridgeport and Buchanan (?)	1,015	150	496	1,004	.....	.....	.....
				Stray.....	1,212	10	693	807	.....	.....	.....
				"Gas".....	1,350	16	831	669	.....	.....	.....
				Kirkwood-1.....	1,420	35	901	599	1,440	.....	.....
				Kirkwood-2.....	1,472	4	963	537	.....	.....	.....
				Tracey.....	1,585	10	1,066	434	.....	.....	.....
5	Snowden Bros.	Cummings, No. 8.	518	McClosky.....	1,585	56	1,111	389	1,666	.....	Lime. Green oil.....
				Bridgeport-1.....	1,805	10	286	1,214	.....	.....	.....
				Bridgeport-2.....	845	35	326	1,174	848	Show	.....
				Bridgeport-3 and Buchanan-1.....	940	240	421	1,079	1,107	Show	Salt water, 1,020, 1,050, 1,075 and 1,100 feet.....
				Buchanan-2.....	1,220	26	701	799	.....	.....	.....
				Stray.....	1,330	3	811	689	.....	.....	.....
				"Gas".....	1,360	13	831	669	.....	.....	Gas, 1,355 feet.....
				Kirkwood-1.....	1,445	12	926	574	1,445	800	.....
				Kirkwood-2.....	1,461	34	942	558	.....	.....	.....
				Tracey.....	1,540	35	1,021	479	.....	.....	Broken sand. Dry.....
6	Snowden Bros.	Cummings, No. 3.	520	McClosky.....	1,654	.....	1,135	365	1,689	.....	Lime and sand.....
				Bridgeport-1.....	850	25	330	1,170	875	.....	.....
				Bridgeport-2.....	960	45	440	1,060	.....	.....	.....
				Bridgeport-3.....	1,010	25	490	1,010	1,035	50	.....
				Bridgeport-1.....	840	90	313	1,187	840	.....	.....
				Bridgeport-3.....	1,015	.....	488	1,012	1,015	.....	.....
				Stray.....	1,220	.....	693	807	1,220	Show	Salt water, 1,015 feet.....
				"Gas".....	1,360	12	833	667	.....	75	.....
				Kirkwood.....	1,435	21	908	592	.....	.....	.....
				Bridgeport-2.....	936	20	418	1,082	936	.....	.....
8	Snowden Bros.	Cummings, No. 2.	518	Bridgeport-3.....	960	76	442	1,058	960	60	.....
				Bridgeport.....	980	40	414	1,086	940	Light	.....
				do.....	985	15	469	1,031	.....	.....	.....
				do.....	1,135	15	619	831	.....	.....	.....
				Buchanan.....	1,165	50	649	851	.....	.....	.....
				Stray.....	1,270	51	754	746	.....	.....	.....
				"Gas".....	1,345	.....	828	671	.....	.....	Gas, 1,347 feet.....
				Stray.....	1,389	18	873	627	.....	.....	.....
				Kirkwood-1.....	1,425	15	909	591	1,428	Show	.....
				Kirkwood-2.....	1,455	15	939	561	.....	.....	.....
9	Snowden Bros.	Cummings, No. 12.	516	McClosky.....	1,625	31	1,109	391	1,656	1,733	Show Lime.....

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. E..	10	Snowden Bros.	Cummings, No. 9.	496	Bridgeport.....	825	12	329	1,171	837	.....	Show	.....
					do.....	920	30	424	1,076	.....	.....	.....	Salt water, 990 feet.
					do.....	976	29	450	1,020	.....	.....	.....	.....
					Bridgeport and Buchanan-1.....	1,025	145	529	971	.....	.....	.....	.....
					Buchanan-2.....	1,190	25	694	806	.....	.....	.....	.....
					Kirkwood-1.....	1,412	7	916	584	.....	.....	.....	.....
					Kirkwood-2.....	1,428	7	932	568	1,428	.....	Show	.....
					Kirkwood-3.....	1,460	5	964	536	.....	.....	.....	.....
					Tracey.....	1,580	6	1,084	416	.....	.....	.....	.....
					McClosky.....	1,626	36	1,130	370	1,650	1,662	400	Lime and sand. Gas, 1,633 feet.
	11	Snowden Bros.	Cummings, No. 4.	501	Bridgeport-1.....	825	20	324	1,176	.....	.....	.....	.....
					Bridgeport-2.....	945	40	444	1,056	985	.....	.....	.....
					Bridgeport-3.....	990	17	459	1,011	1,007	.....	45	.....
					Bridgeport.....	815	30	314	1,186	835	.....	Show	.....
					do.....	880	10	379	1,121	.....	.....	.....	.....
	12	Snowden Bros.	Cummings, No. 10.	501	do.....	930	56	429	1,071	.....	.....	.....	.....
					do.....	992	28	491	1,009	975	.....	.....	.....
					Buchanan.....	1,025	125	524	976	.....	.....	.....	Salt water, 1,020 feet.
					Stray.....	1,172	15	671	826	.....	.....	.....	.....
					"Gas".....	1,351	22	850	650	1,351	.....	Show	Show of gas, 1,351 feet.
					Stray.....	1,293	7	892	608	.....	.....	.....	Salt water, 1,365 feet.
					Kirkwood.....	1,460	25	959	541	.....	.....	.....	.....
					McClosky.....	1,675	50	1,174	326	1,700	1,752	.....	.....

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
6—N. W.	1	Ohio	Cullison, No. 2	539	Kirkwood	1,525	56	986	514	1,553	65	
	2	Ohio	Cullison, No. 6	532	do	1,600	14	1,068	432	1,583		
	3	Ohio	Cullison, No. 5	523	Tracy	1,685	40	1,163	347	1,815	30	Gas, 1,687 feet.
	4	Ohio	Cullison, No. 6	523	Kirkwood	1,598	24	1,075	425	1,623	45	
	5	Ohio	Seyern, No. 8	523	do	1,589	26	1,067	433	1,617	35	
	6	Ohio	Seyern, No. 2	520	do	1,572	28	1,049	451	1,606	20	Gas, 1,575 feet.
	7	Ohio	Seyern, No. 3	524	Kirkwood	1,557	34	1,037	463	1,623	90	Gas, 1,565 feet.
	8	Bridgeport	Abernathy, No. 1	531	Bridgeport-2	1,941	22	417	1,083		100	
	9	Bridgeport	Abernathy, No. 2	512	Kirkwood	1,559	31	1,035	465	1,559	250	Salt water, 980 feet.
	10	Bridgeport	Abernathy, No. 4	518	Bridgeport-2	1,600	23	1,069	431	1,600	125	Salt water, 1,500 feet.
	11	Snowden Bros	Fyffe, No. 1	526	Stray	1,500	15	988	512			
	12	Snowden Bros	Fyffe, No. 4	519	Kirkwood	1,587	17	1,075	425	1,612		Salt water, 830 feet.
	13	Snowden Bros	Fyffe, No. 6	512	Bridgeport	815	25	297	1,203			Salt water, 870 feet.
	14	Ohio	Seyern, No. 4	505	do	1,215	80	697	803			Salt water, 1,225 feet.
					Buchanan-1	1,300	60	782	718			Salt water, 1,316 feet.
					Buchanan-2	1,460	25	942	558			Salt water, 1,470 feet.
					Stray	1,571	39	1,053	447	1,610	50	
					Kirkwood	882	28	356	1,144			
					Bridgeport-1	1,010	10	484	1,016			
					Bridgeport-2	1,105	135	579	921			Salt water, 1,105 feet.
					Bridgeport-3	1,223	22	797	703			
					Buchanan	1,323	7	879	621			
					Stray	1,405	7	879	621			
					do	1,528	17	1,002	498			
					Kirkwood	1,612	23	1,086	414	1,612	135	Hard sand
					do	1,005	32	1,086	414	1,637		
					Bridgeport-3	1,083		571	929			Salt water, 1,083 feet.
					Buchanan	1,335		823	677			Salt water, 1,335 feet.
					Stray	1,435		923	577			Salt water, 1,435 feet.
					Kirkwood	1,605	27	1,093	407	1,632	100	
					do	1,614	38	1,109	391	1,653	150	

S. W.	15 Ohio.....	Cullison, No. 1.....	514	do.....	1,606	29	1,092	408	1,611	1,636	75
	16 Ohio.....	Cullison, No. 4.....	499	do.....	1,632	46	1,133	367	1,632	1,680	75
	1 Ohio.....	M. L. Cooper, No. 2.....	515	do.....	1,650	31	1,135	365	1,667	1,695	100
	2 Ohio.....	M. L. Cooper, No. 3.....	495	do.....	1,687	31	1,183	317	1,678	1,707	Gas, 1,678 feet.
	3 Ohio.....	M. E. Cooper, No. 3.....	518	do.....	1,677	51	1,159	341	1,685	1,733	20 Gas, 1,680 feet.
	4 Ohio.....	M. L. Cooper, No. 4.....	526	do.....	1,613	12	1,087	413	1,613	2,020	10 Gas, 1,615 feet.
	5 Ohio.....	M. L. Cooper, No. 1.....	520	do.....	1,583	11	1,063	437	1,583	1,648	75
	5 Ohio.....	J. W. Highfield, No. 1.....	537	do.....	1,563	76	1,026	474	1,563	1,639	75
	2 Ohio.....	M. E. Cooper, No. 1.....	533	Bridgeport-3	1,004	6	471	1,029	1,405	1,630	75 Gas, 1,630 feet.
	3 Ohio.....	M. E. Cooper, No. 2.....	533	Kirkwood.....	1,628	12	1,095	461	1,630	1,640	Gas, 1,620 feet.
	4 Ohio.....	J. King, No. 24.....	520	Buchanan.....	1,320	26	1,020	471	1,571	1,593	260
	5 Ohio.....	J. King, No. 23.....	530	do.....	1,511	41	991	509	1,518	1,557	110
	6 Ohio.....	J. King, No. 23.....	532	Bridgeport-3	989	22	459	1,041	994	1,011	100
S. E.	7 Ohio.....	J. King, No. 13.....	522	do.....	978	22	446	1,054	983	1,010	175
	8 Ohio.....	J. King, No. 12.....	540	Bridgeport-2	912	74	390	1,110	975	986	75
	9 Ohio.....	J. King, No. 30.....	543	Kirkwood.....	1,616	24	1,076	424	1,618	1,640	15
	10 Ohio.....	J. King, No. 9.....	499	do.....	1,548	28	1,005	495	1,548	1,620	50
	11 Ohio.....	J. King, No. 20.....	489	do.....	908	52	409	1,091	919	980	80
	12 Ohio.....	J. King, No. 32.....	532	Tracey.....	932	38	443	1,057	932	970	120
	13 Ohio.....	J. Highfield, No. 2.....	532	McClosky.....	1,656	8	1,124	376	1,664	1,780	80 Gas, 1,745 feet.
	1 Ohio.....	J. King, No. 29.....	504	Kirkwood.....	1,745	11	1,213	287	1,753	1,787	75 Gas, 1,784 feet.
	2 Ohio.....	W. King, No. 1.....	515	do.....	1,578	28	1,046	454	1,578	1,818	Gas, 1,290 feet.
	3 Ohio.....	W. King, No. 2.....	513	Buchanan.....	1,290	786	714	501	1,507	1,523	100
	4 Ohio.....	J. R. King, No. 31.....	501	Bridgeport-3	1,503	29	999	501	1,507	1,523	100
	5 Ohio.....	J. R. King, No. 14.....	523	do.....	1,000	25	485	015	1,015	1,316	50
	6 Ball.....	Lawson Lot.....	521	do.....	1,315	34	800	700	1,316	1,349	150 Gas, 1,640 feet.
S. W.	7 Big Four.....	Buchanan Hrs., No. 4.....	520	Kirkwood.....	1,329	30	816	378	1,640	1,650	120 Gas, 1,610 feet.
	8 Big Four.....	Buchanan Hrs., No. 6.....	515	Buchanan.....	1,635	15	1,222	397	1,606	1,632	30
	9 Big Four.....	Buchanan Hrs., No. 12.....	495	do.....	1,300	30	709	701	1,606	1,632	120 Gas, 1,610 feet.
	10 Ohio.....	W. R. King, No. 3.....	518	Kirkwood.....	1,604	19	1,033	397	1,606	1,632	30
	1 Ohio.....	W. Gray, No. 1.....	470	Buchanan-1	1,308	12	785	715	1,651	1,667	No record
	2 Ohio.....	S. Bouchie, No. 1.....	465	Buchanan-2	1,625	34	1,102	398	1,651	1,667	Known locally as the Cooper sand
	1 Ohio.....	A. Griggs, No. 4.....	456	Kirkwood.....	1,328	17	808	692	1,590	1,590	100
	2 Allshouse & Son.....	Long, No. 1.....	467	do.....	1,333	52	818	682	1,590	1,590	35 Gas, 1,625 feet.
	3 Shaffer & Smathers.....	W. Finley, No. 33.....	470	Kirkwood-1	1,570	1,055	445	445	1,590	1,590	Dry
				Kirkwood-2	1,315	40	820	680	1,590	1,590	40 Gas, 1,805 feet.
				Buchanan-1	1,595	10	1,100	400	1,595	1,595	30
				Kirkwood-2	1,622	5	1,127	373	1,727	1,727	40
				Kirkwood	1,620	14	1,102	398	1,628	1,642	35

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Initial product—barrels.	Total depth—feet.	Oil depth—feet.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
7—S. E....	4	Shaffer & Smathers	W. Finley, No. 35.....	485	Kirkwood.....	1,550	35	1,065	435	1,552	100	.....
	5	Allshouse & Son.....	Long, No. 3.....	487	Kirkwood-1.....	1,549	38	1,062	438	.....	.....	.....
	6	Allshouse & Son.....	Long, No. 2.....	480	Kirkwood-1.....	1,615	15	1,128	372	.....	.....	.....
	7	Allshouse & Son.....	Long, No. 5.....	478	Kirkwood-2.....	1,556	41	1,076	424	.....	.....	.....
					Kirkwood-1.....	1,627	6	1,147	353	.....	.....	.....
					Kirkwood-2.....	1,565	45	1,087	413	.....	.....	.....
	8	Allshouse & Son.....	Long, No. 8.....	471	Kirkwood-1.....	1,631	12	1,153	347	.....	.....	.....
					Kirkwood-2.....	1,565	43	1,094	406	.....	.....	.....
					Stray.....	1,631	8	1,160	310	.....	.....	.....
	9	Allshouse & Son.....	Long, No. 9.....	460	McClosky.....	1,661	9	1,190	310	.....	.....	.....
					Kirkwood-1.....	1,734	17	1,263	237	1,757	.....	.....
					Kirkwood-2.....	1,585	33	1,125	375	.....	.....	.....
					Stray.....	1,643	13	1,183	317	.....	.....	.....
					Tracey.....	1,655	5	1,225	275	.....	.....	.....
10	Allshouse & Son.....	Long, No. 11.....	Long, No. 11.....	460	Kirkwood-1.....	1,706	22	1,246	254	.....	.....	.....
					McClosky.....	1,747	19	1,287	213	1,766	.....	.....
					Kirkwood-2.....	1,580	38	1,120	380	.....	.....	.....
					Tracey.....	1,644	7	1,184	316	.....	.....	.....
					McClosky.....	1,676	19	1,216	284	.....	.....	.....
	Allshouse & Son.....	Long, No. 7.....	Long, No. 7.....	486	Kirkwood-1.....	1,762	10	1,302	198	1,783	.....	.....
					Kirkwood-2.....	1,560	40	1,074	426	.....	.....	.....
					Kirkwood-3.....	1,623	21	1,137	363	.....	.....	.....
					Tracey.....	1,662	8	1,176	321	.....	.....	.....
					Kirkwood-1.....	1,734	14	1,248	252	.....	.....	.....
12	Allshouse & Son.....	Long, No. 4.....	Long, No. 4.....	489	Kirkwood-2.....	1,563	37	1,074	426	.....	.....	.....
13	Allshouse & Son.....	Long, No. 6.....	Long, No. 6.....	500	Kirkwood.....	1,619	13	1,130	370	.....	.....	.....
14	Allshouse & Son.....	Long, No. 10.....	Long, No. 10.....	495	Tracey.....	1,623	10	1,123	377	.....	.....	.....
					Kirkwood-1.....	1,730	8	1,230	270	1,860	.....	.....
					Kirkwood-2.....	1,690	16	1,105	395	.....	.....	.....
					Stray.....	1,651	9	1,156	344	.....	.....	.....
					Tracey.....	1,680	6	1,195	305	.....	.....	.....
					Tracey.....	1,712	8	1,217	283	1,732	.....	.....

15 Big Four	Buchanan Hrs., No. 9.	498	Kirkwood-1	1,648	5	1,150	350	.....	1,684	.....	.....	.....
16 Big Four	Buchanan Hrs., No. 15.	502	Kirkwood-2	1,672	12	1,174	326	.....	1,684	.....	.....	.....
17 Big Four	Buchanan Hrs., No. 13.	503	Bridgeport-1	1,646	48	1,440	1,060	964	990	.....	30	.....
18 Big Four	Buchanan Hrs., No. 11.	496	Kirkwood-2	1,670	18	1,143	1,357	1,651	.....	.....	100	Salt water, 1,509 feet
19 Big Four	Buchanan Hrs., No. 14.	505	Tracey	1,722	8	1,167	333	.....	1,732	.....	.....	.....
20 Ohio	A. Griggs, No. 1.	492	Kirkwood-1	1,653	10	1,219	343	.....	1,732	.....	.....	Sour oil
21 Ohio	A. Griggs, No. 2.	481	Kirkwood-2	1,673	12	1,157	323	.....	1,685	.....	75	Salt water, 1,492 feet
22 Ohio	Gray, No. 2.	486	Kirkwood	1,646	8	1,177	323	.....	1,685	.....	.....	.....
1 Ohio	Judy, No. 6.	474	Tracey	1,732	6	1,141	359	.....	1,744	.....	100	Salt water, 1,493 feet
2 Ohio	Judy, No. 3.	479	Kirkwood-1	1,625	12	1,227	273	.....	1,744	.....	.....	.....
3 Ohio	Judy, No. 2.	474	Kirkwood-2	1,659	13	1,133	367	1,630	1,672	.....	65	Gas, 1,662 feet
4 Ohio	Judy, No. 5.	462	Kirkwood	1,641	11	1,160	340	.....	1,672	.....	.....	.....
5 Ohio	Judy, No. 4.	457	Tracey	1,738	12	1,257	243	1,745	1,995	.....	40	.....
6 Ohio	Judy, No. 7.	470	do.	1,770	12	1,284	216	1,770	2,001	.....	5	.....
7 Ohio	Judy, No. 1.	470	Bridgeport-2	885	72	411	1,089	885	957	.....	95	.....
8 Ohio	Booe, No. 23.	456	Bridgeport-1	890	40	351	1,149	.....	957	.....	150	Salt water, 955 feet
9 Ohio	Booe, No. 38.	471	Bridgeport-1	892	65	413	1,087	900	957	.....	.....	.....
10 Ohio	Booe, No. 14.	471	Bridgeport-2	898	12	348	1,152	.....	948	.....	75	Salt water, 948 feet
11 Ohio	Booe, No. 28.	468	do.	918	46	456	1,044	920	964	.....	98	.....
12 Ohio	Booe, No. 18.	464	Bridgeport-1	834	28	377	1,123	.....	920	.....	50	.....
13 Ohio	Booe, No. 22.	457	Bridgeport-2	909	64	452	1,048	920	973	.....	.....	.....
14 Ohio	Booe, No. 7.	455	"Gas"	1,380	25	910	590	.....	1,452	.....	60	.....
15 Ohio	Booe, No. 13.	460	Kirkwood	1,447	33	977	523	1,452	1,482	.....	.....	.....
16 Ohio	Booe, No. 31.	460	do.	836	23	366	1,134	913	953	.....	75	.....
17 Ohio	Booe, No. 20.	463	Bridgeport-2	913	43	443	1,057	918	943	.....	.....	.....
18 Ohio	Booe, No. 33.	452	Bridgeport-1	890	29	438	1,042	918	943	.....	.....	.....
19 Ohio	Booe, No. 35.	452	"Gas"	1,363	29	892	608	1,375	1,398	.....	60	Gas, 1,363 feet
20 Ohio	Booe, No. 4.	447	Bridgeport-2	898	32	457	1,043	925	966	.....	100	Dry
21 Ohio	Booe, No. 37.	457	do.	888	45	424	1,076	890	933	.....	100	No record
22 Ohio	Booe, No. 21.	457	do.	908	46	451	1,049	910	954	.....	125	.....
23 Ohio	Booe, No. 26.	476	do.	892	38	436	1,064	895	940	.....	75	.....
24 Ohio	Booe, No. 15.	476	do.	873	53	423	1,077	874	926	.....	100	.....
25 Ohio	Booe, No. 17.	465	do.	880	38	420	1,080	880	918	.....	60	.....
26 Ohio	Booe, No. 16.	459	do.	885	15	372	1,128	.....	939	.....	50	Salt water, 935 feet
			Bridgeport-1	886	43	423	1,077	890	939	.....	.....	.....
			Bridgeport-2	874	9	422	1,078	.....	928	.....	220	.....
			do.	885	43	433	1,067	884	928	.....	.....	.....
			do.	876	53	424	1,076	880	929	.....	115	.....
			do.	878	40	431	1,069	883	927	.....	60	.....
			do.	873	43	416	1,084	883	916	.....	100	.....
			do.	840	30	353	1,117	.....	937	.....	50	.....
			Bridgeport-1	890	47	433	1,067	902	937	.....	.....	.....
			Bridgeport-2	1,335	25	859	611	.....	1,496	.....	50	.....
			Buchanan	1,470	20	994	506	1,475	1,496	.....	100	Gas, 918 feet
			Kirkwood	915	30	436	1,064	918	945	.....	100	Gas, 918 feet
			Bridgeport-2	894	59	426	1,071	898	953	.....	125	Salt water, 953 feet
			do.	884	40	429	1,071	925	925	.....	125	Gas, 890 feet
			do.	888	40	429	1,071	925	925	.....	125	Gas, 890 feet

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
N. E.	27	Ohio.....	Williams, No. 2.....	459	887	.....	428	1,072	888	930	150	.....
	28	Ohio.....	Williams, No. 7.....	476	808	10	332	1,168	920	969	100	.....
	29	Ohio.....	Williams, No. 4.....	485	910	59	434	1,066	920	974	125	.....
	30	Ohio.....	Williams, No. 8.....	480	923	.....	438	1,062	930	974	125	.....
	31	Ohio.....	Williams, No. 6.....	489	1,460	22	980	520	1,460	1,455	55	.....
	32	Ohio.....	Williams, No. 5.....	488	848	12	359	1,141	920	951	100	.....
	33	Ohio.....	Williams, No. 1.....	474	905	46	416	1,084	910	956	125	.....
	34	Ohio.....	Williams, No. 3.....	467	837	6	349	1,151	910	956	125	.....
	1	Ohio.....	J. King, No. 3.....	463	800	20	337	1,163	907	947	100	.....
	2	Ohio.....	J. King, No. 4.....	464	872	28	409	1,091	907	947	100	.....
	3	Ohio.....	J. King, No. 5.....	454	925	30	461	1,089	925	955	.....	.....
	4	Ohio.....	Booe, No. 25.....	452	884	16	430	1,070	916	934	75	.....
N. W.	5	Ohio.....	Booe, No. 12.....	452	1,406	26	954	545	1,414	1,434	75	.....
	6	Ohio.....	Booe, No. 11.....	450	822	8	370	1,130	901	938	50	.....
	7	Ohio.....	Booe, No. 24.....	450	890	48	438	1,062	901	938	50	.....
	8	Ohio.....	Booe, No. 32.....	452	878	47	428	1,072	890	925	75	.....
	9	Ohio.....	Booe, No. 36.....	452	1,255	12	805	695	1,255	1,267	80	.....
	10	Ohio.....	Booe, No. 10.....	452	1,255	50	440	1,060	901	938	50	.....
	11	Lantz.....	Burns, No. 13.....	459	892	50	440	1,060	901	938	50	.....
	12	Lantz.....	Burns, No. 1.....	459	1,265	40	813	687	1,447	1,479	160	.....
					1,444	33	992	508	1,447	1,479	160	.....
					1,254	36	802	689	1,268	1,300	700	Gas, 1,263 feet.	
					880	30	428	1,072	894	930	75	.....
					899	41	440	1,060	901	938	50	.....
				1,255	60	796	704	1,260	1,260	387	Gas, 1,256 feet.		
				1,450	58	991	509	1,460	1,508	Light	.....	
				899	27	440	1,060	909	940	110	.....	

13	Lantz	Burns, No. 14	459	do	902	33	443	1,057	910	.....	Salt water, 960 feet
14	Lantz	Burns, No. 2	461	Stray	1,262	66	803	697	1,275	.....	Salt water, 1,349 feet
15	Lantz	Burns, No. 2a	462	Bridgeport-2	1,340	9	881	619	1,340	.....	No. 2 redrilled
16	Lantz	Burns, No. 3	460	Buchanan	900	50	436	1,064	1,288	120	Show
17	Ohio	J. King, No. 6	453	Bridgeport-1	1,288	20	358	1,142	917	.....	90
18	Ohio	J. King, No. 27	453	Bridgeport-2	905	15	443	1,057	949	.....	Show
19	Ohio	J. King, No. 8	464	Bridgeport-3	940	6	478	1,022	.....	.....	Show
20	Ohio	J. King, No. 22	467	Bridgeport-1	820	6	360	1,140	.....	.....	80
21	Ohio	J. King, No. 2	455	Bridgeport-2	908	6	448	1,052	.....	.....	75
22	Ohio	J. King, No. 1	463	Bridgeport-3	940	10	480	1,020	.....	.....	75
23	Ohio	J. King, No. 7	487	Buchanan	1,249	31	789	711	.....	.....	75
24	Ohio	J. King, No. 11	490	Kirkwood	1,417	21	957	543	1,417	.....	75
25	Ohio	J. King, No. 28	490	Bridgeport-1	815	20	362	1,138	.....	.....	75
26	Ohio	J. King, No. 17	495	Bridgeport-2	900	15	447	1,053	.....	.....	75
27	Ohio	J. King, No. 15	511	Bridgeport-3	925	20	472	1,028	925	945	125
28	Lantz	Burns, No. 12	519	Buchanan	1,230	37	937	563	1,400	1,430	.....
29	Lantz	Burns, No. 6	479	Kirkwood	1,305	15	341	1,159	810	.....	Gas, 1,230 feet
30	Lantz	Burns, No. 5	472	Bridgeport-1	805	15	341	1,159	810	.....	Well abandoned
31	Lantz	Burns, No. 8	476	Bridgeport-2	908	44	444	1,056	940	952	Gas, 1,244 feet
				Buchanan	1,244	.....	777	723	.....	.....	Gas, 1,244 feet
				Kirkwood	1,419	22	952	548	1,419	1,441	.....
				Bridgeport-2	852	22	397	1,103	.....	.....	.....
				Bridgeport-3	906	33	451	1,049	906	939	.....
				Buchanan	789	12	326	1,174	.....	.....	.....
				Bridgeport-1	855	10	392	1,108	.....	.....	.....
				Bridgeport-2	901	41	438	1,062	902	942	.....
				Bridgeport-3	830	5	343	1,157	.....	.....	.....
				Kirkwood	933	59	446	1,054	940	992	100
				Bridgeport-2	895	65	405	1,095	910	960	50
				Kirkwood	468	12	978	522	1,468	1,491	60
				Bridgeport-1	1,820	10	325	1,175	.....	.....	.....
				do	1,410	16	915	585	1,410	1,429	50
				Bridgeport-3	1,425	25	914	586	1,533	1,554	30
				Buchanan	1,003	34	486	1,041	.....	.....	Show
				Bridgeport-2	1,314	17	735	705	1,321	1,348	.....
				Bridgeport-3	915	17	436	1,064	.....	.....	.....
				Buchanan	960	15	481	1,019	.....	.....	.....
				Bridgeport-2	1,280	20	801	699	1,300	.....	.....
				Kirkwood	1,469	23	990	510	.....	.....	.....
				Bridgeport-1	1,540	100	1,061	439	.....	.....	.....
				Bridgeport-2	889	36	427	1,073	906	1,640	120
				Bridgeport-3	940	220	468	1,032	.....	.....	.....
				Buchanan	1,258	14	786	714	.....	.....	.....
				Kirkwood	1,424	51	952	548	1,435	.....	.....
				Bridgeport-2	922	8	446	1,054	.....	.....	.....
				Bridgeport-3	940	10	464	1,036	.....	950	10

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. W.	32	Lantz.	Burns, No. 9.	503	Bridgeport-3	960	35	457	1,043	1,306	.....	Show	Redrilled.
					Buchanan.	1,300	54	797	1,703	1,306	.....	125	.....
					Kirkwood-2	1,600	10	1,997	403	1,600	.....	145	Green oil.
					McClosky	1,775	35	1,772	298	1,810	.....	.....	.....
S. W.	33	Lantz.	Burns, No. 11.	518	Buchanan.	1,812	37	799	701	1,376	.....	80	.....
					Kirkwood.	1,825	25	1,012	488	1,835	.....	.....	.....
	34	Lantz.	Burns, No. 10.	502	Bridgeport-3.	970	217	468	1,032	1,567	.....	.....	Salt water, 982 feet.
					"Gas".	1,415	.....	913	587	.....	.....	.....	.....
	35	Lantz.	Burns, No. 7.	487	Bridgeport-2.	918	55	431	1,069	945	.....	.....	.....
					Burns, No. 4.	930	36	454	1,046	932	.....	.....	.....
	36	Lantz.	Buchanan Hrs., No. 5.	499	Kirkwood.	1,616	13	1,117	333	1,628	.....	.....	Known as Cooper sand.
					do.	1,623	37	1,125	375	1,660	.....	.....	.....
	2	Big Four.	Tabor, No. 1.	498	Bridgeport.	930	45	443	1,037	945	.....	.....	Salt water, 975 feet.
					Zeller, No. 4.	945	51	456	1,044	.....	.....	.....	.....
	3	Lantz.	Zeller, No. 4.	487	do.	1,010	110	521	979	.....	.....	.....	Salt water, 1,010 feet.
					Buchanan-1.	1,304	25	815	685	.....	.....	.....	.....
S. W.	4	Lantz.	Zeller, No. 5.	489	Buchanan-2.	1,345	27	856	644	1,350	.....	180	.....
					Kirkwood-1.	1,512	28	1,023	477	1,522	.....	.....	.....
	5	Lantz.	Zeller, No. 2.	482	Kirkwood-2.	1,665	20	1,166	334	.....	.....	.....	.....
					Bridgeport.	1,909	56	427	1,073	933	.....	145	.....
	6	Lantz.	Zeller, No. 3.	475	do.	.....	.....	.....	.....	.....	.....	.....	Drilling.
					Bridgeport-1.	855	20	383	1,117	.....	.....	.....	Salt water, 855 feet.
	7	Lantz.	Kinsey Lot, No. 1.	472	Bridgeport-3.	934	14	462	1,038	934	.....	40	Salt water, 948 feet.
					Bridgeport.	840	19	378	1,122	.....	.....	.....	.....
	8	Lantz.	Zeller, Lot No. 1.	462	do.	902	40	440	1,060	913	.....	125	.....
					do.	829	32	379	1,191	.....	.....	.....	.....
	9	Lantz.	Zeller, No. 11.	450	do.	917	194	467	1,033	.....	.....	.....	Salt water, 1,028 feet.
					Buchanan.	1,272	.....	822	678	1,278	1,300	.....	.....

10	Lantz.....	450	Zeller, No. 12.....	Bridgeport..... do..... do.....	859 910 948	11 24 157	409 460 498	1,091 1,040 1,002	915	Salt water.....
				Buchanan.....	1,259	57	809	691	{ 1,272 1,300	Gas, 1,280 feet. Saltwater 1,346 feet. }
				Stray.....	1,445	55	995	505	1,445	Salt water, 1,450 feet.....
				Kirkwood-1.....	1,510	5	1,060	440	1,510	Show.....
				Kirkwood-2.....	1,590	10	1,140	360		
				Broken, Kirk- wood-3.....	1,611	44	1,161	339		Gas, 1,611 feet.....
				Tracey.....	1,695	12	1,245	255	1,703	Green oil.....
11	Lantz.....	470	Zeller, No. 13.....	Bridgeport.....	892	47	447	1,053		Drilling.....
12	Lantz.....	445	Griggs, No. 7.....	Buchanan.....	1,260	74	815	1,260	1,338	60
13	Lantz.....	448	Griggs, No. 5.....	Bridgeport-1.....	830	20	382	1,118		Salt water, 830 feet.....
				Bridgeport-2.....	893	37	445	1,055	902	110
				do.....	899	131	454	1,046	902	Salt water, 1,030 feet.....
14	Lantz.....	445	Griggs, No. 6.....	Buchanan.....	1,255	59	810	690	1,261	Gas, 1,255 feet.....
				Kirkwood.....	1,450	59	1,005	495	1,455	500
15	Lantz.....	449	Griggs, No. 4.....	Bridgeport-2.....	896	47	447	1,053	{ 896 929 }	80
16	Lantz.....	447	Griggs, No. 3.....	Bridgeport-1.....	850	20	403	1,097		Salt water, 850 feet.....
17	Unknown.....	444	Gray Lot, No. 1.....	Bridgeport-2.....	907	23	460	1,040	915	Coal, 450 to 452 feet.....
18	Unknown.....	450	Lawson Lot, No. 1.....							do.....
19	Lantz.....	451	Griggs, No. 2.....	Bridgeport-1.....	845	20	394	1,106		Salt water, 845 feet.....
20	Lantz.....	459	Griggs, No. 1.....	Bridgeport-2.....	902	22	451	1,049	908	50
21	Unknown.....	450	Unknown.....	do.....	901	49	442	1,058	918	80
22	Unknown.....	450	Spencer, No. 2.....							Salt water, 945 feet.....
23	Big Four.....	452	Buchanan, No. 8.....	Bridgeport-2.....	896	45	444	1,056		Dry No record.....
24	Big Four.....	450	Buchanan, No. 2.....							do.....
25	Big Four.....	457	Buchanan, No. 7.....	Kirkwood-1.....	1,500	33	1,043	457	1,520	Well abandoned. No re- cord.....
				Kirkwood-2.....	1,598	35	1,141	359	1,614	“Finley” sand. Locally known as Cooper sand.....
26	Big Four.....	455	Buchanan, No. 3.....	Bridgeport-2.....	912	40	457	1,043	914	Well abandoned
27	Big Four.....	460	Buchanan, No. 10.....	do.....	912	22	452	1,048		Well abandoned
28	Big Four.....	456	Spencer, No. 1.....	do.....	902	44	446	1,054		Well abandoned
29	Big Four.....	461	Buchanan, No. 1.....	do.....	901	39	440	1,060	901	Salt water, 947 feet.....
				Bridgeport.....	940	49	472	1,028		Salt water, 1,000 feet.....
30	Lantz.....	468	Zeller, No. 2.....	do.....	1,000	160	532	968		Dry.....
				Buchanan.....	1,285	15	817	683		
				Bridgeport-2.....	900	300	443	1,057		
				Kirkwood-1.....	1,481	66	1,024	476	1,486	
31	Lantz.....	457	Zeller, No. 6.....	Kirkwood-2.....	1,595	45	1,138	362	1,622	Locally known as “Fin- ley” sand. Locally known as “Coop- er” sand.....
										250
32	Lantz.....	465	Zeller, No. 7.....	Bridgeport-3.....	940	245	475	1,025		
				Kirkwood.....	1,488	61	1,023	477	1,495	350
33	Lantz.....	469	Zeller, No. 8.....	Bridgeport-3.....	960	220	491	1,009		Salt water, 1,000 feet.....
				Kirkwood.....	1,529	37	1,060	440	1,534	420

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
S. W..	34	Lantz.....	Zeller, No. 9.....	481 {	972	116	491	1,009	1,534	1,577	50	Salt water, 1,012 feet.....
				481 {	1,516	54	1,035	465	1,534	1,577	50	
				481 {	1,944	46	1,025	969	1,534	1,577	50	
				481 {	1,000	179	531	1,025	1,534	1,577	50	
S. E..	35	Lantz.....	Zeller, No. 10.....	469 {	1,000	38	1,046	454	1,520	1,604	300	Salt water, 1,000 feet.....
				469 {	1,515	20	1,101	399	1,520	1,604	300	
				469 {	1,570	20	1,101	399	1,570	1,604	300	
				469 {	895	25	451	1,049	909	920	45	No record.....
	1	Shaffer & Smathers.....	P. Finley, No. 1.....	444	885	25	444	1,056	895	910	75	No record.....
	2	Shaffer & Smathers.....	P. Finley, No. 16.....	444	902	25	461	1,039	885	910	75	No record.....
	3	Shaffer & Smathers.....	P. Finley, No. 8.....	441	1,471	10	1,030	470	1,471	1,471	Show	Red rock, 1,400 feet.....
	4	Big Four.....	Lanternman Park, No. 3.....	441	1,506	17	1,065	435	1,506	1,506	Show	Well abandoned.....
	5	Big Four.....	Lanternman Park, No. 4.....	441 {	888	32	450	1,050	888	916	75	No record.....
	6	Unknown.....	Town Lot.....	439	881	35	439	1,061	886	916	75	No record.....
	7	Big Four.....	Lanternman Park, No. 2.....	438	907	19	460	1,040	915	936	40	No record.....
	8	Shaffer & Smathers.....	P. Finley, No. 4.....	442	873	40	433	1,067	887	913	100	No record.....
	9	Shaffer & Smathers.....	P. Finley, No. 15.....	442	872	41	431	1,069	874	912	80	No record.....
	10	Shaffer & Smathers.....	P. Finley, No. 10.....	447	902	24	454	1,046	907	928	100	Well abandoned.....
	11	Shaffer & Smathers.....	P. Finley, No. 13.....	445	885	34	445	1,055	890	919	100	Well abandoned.....
	12	Shaffer & Smathers.....	P. Finley, No. 3.....	440	887	27	448	1,052	887	919	100	Well abandoned.....
	13	Shaffer & Smathers.....	P. Finley, No. 9.....	441	887	27	448	1,052	887	919	100	Well abandoned.....
	14	Shaffer & Smathers.....	P. Finley, No. 1.....	448	887	27	448	1,052	887	919	100	Well abandoned.....
	15	Shaffer & Smathers.....	P. Finley, No. 6.....	440	887	27	448	1,052	887	919	100	Well abandoned.....
	16	Big Four.....	Lanternman Park, No. 1.....	439	887	27	448	1,052	887	919	100	Well abandoned.....
	17	Unknown.....	Lot.....	438	887	27	448	1,052	887	919	100	Well abandoned.....
	18	Unknown.....	do.....	438	887	27	448	1,052	887	919	100	Well abandoned.....
	19	Ohio.....	Booe, No. 6.....	442	869	41	427	1,073	870	916	125	No record.....
	20	Ohio.....	Booe, No. 8.....	440	865	55	425	1,075	866	926	125	No record.....
	21	Ohio.....	Booe, No. 9.....	442	865	64	419	1,081	862	932	150	No record.....
	22	Ohio.....	Booe, No. 27.....	442	875	47	433	1,067	880	922	125	No record.....
	23	Ohio.....	Booe, No. 2.....	440	900	34	453	1,047	902	935	Water	Salt water, 912 feet.....
	24	Ohio.....	Booe, No. 34.....	447 {	952	61	1,105	395	2,007	2,007	Dry	No record.....
				447 {	1,552	61	1,105	395	2,007	2,007	Dry	No record.....
				447 {	1,552	61	1,105	395	2,007	2,007	Dry	No record.....
				447 {	1,552	61	1,105	395	2,007	2,007	Dry	No record.....

25 Ohio	Booe, No. 1.	444	Bridgeport-2	888	444	1,056	890	914	245	.....
26 Ohio	Booe, No. 30.	442	do.	871	33	429	1,071	875	905	75
27 Ohio	Booe, No. 5.	442	do.	872	65	427	1,073	873	907	100
28 Ohio	Booe, No. 19.	447	do.	858	.....	411	1,089	862	927	150
29 Ohio	Booe, No. 29.	448	Bridgeport.	872	.....	424	1,076	872	902	175
30 Ohio	Booe, No. 39.	446	do.	872	50	426	1,074	918	922	30
31 Ohio	Booe, No. 3.	446	Bridgeport-2.	873	35	427	1,073	884	909	120
32 Ohio	Booe, No. 1.	453	do.	885	.....	432	1,068	936	936	.....
33 Ohio	Lutz Lot, No. 1.	457	Bridgeport-1.	860	20	403	1,097	.....	.....	75
	J. Burns Lot, No. 1.	457	Bridgeport-2.	923	.....	466	1,094	927	960	.....
1 Ohio	Patton, No. 1.	474	Kirkwood	1,605	11	1,131	369	1,607	1,620	40
2 Ohio	Patton, No. 2.	478	do.	1,578	26	1,100	400	1,528	1,605	.....
3 Ohio	Patton, No. 3.	483	do.	1,555	17	1,072	428	1,560	1,575	120
4 Ohio	H. Lewis, No. 2.	482	do.	1,520	32	1,038	462	1,535	1,555	40
5 Ohio	H. Lewis, No. 1.	452	Bridgeport-2.	1,885	.....	1,033	1,067	1,531	1,510	20
6 Ohio	Patton, No. 4.	482	Kirkwood	1,584	17	1,029	471	1,403	1,510	160
7 Ohio	G. E. Seed, No. 1.	447	do.	1,586	28	1,124	376	1,880	1,605	175
8 Ohio	W. Gray, No. 1.	453	Kirkwood-2.	1,572	13	1,153	375	1,880	1,607	30
9 Ohio	L. Lewis, No. 11.	438	Buchanan	1,606	30	1,133	347	1,614	1,626	.....
		438	Kirkwood	1,510	30	872	628	.....	.....	25
		441	do.	1,514	20	1,076	1,424	1,514	1,556	Gas, 1,517 feet.
1 Shaffer & Smathers	M. Martin, No. 3.	441	do.	1,492	23	1,051	449	1,497	1,524	25
2 Shaffer & Smathers	M. Martin, No. 2.	453	do.	1,506	21	1,052	447	.....	1,527	.....
3 Shaffer & Smathers	M. Martin, No. 4.	441	Kirkwood-1	1,479	16	1,038	462	1,490	.....	.....
4 Shaffer & Smathers	M. Martin, No. 1.	444	Kirkwood-2	1,515	22	1,074	426	1,515	1,549	.....
5 Ohio	Thorn, No. 25.	451	Buchanan	1,492	21	1,048	452	.....	1,513	.....
6 Ohio	Thorn, No. 35.	449	Kirkwood-1	1,303	.....	852	648	1,308	1,327	200
7 Ohio	Thorn, No. 20.	457	Kirkwood-2	1,513	18	1,064	436	1,515	.....	Gas, 1,515 feet.
		457	Buchanan	1,534	20	1,085	415	1,554	300	Salt water, 1,550 feet.
		441	do.	1,299	.....	843	657	1,305	1,314	250
8 Ohio	Thorn, No. 21.	441	Kirkwood	1,493	.....	858	642	.....	.....	.....
9 Ohio	Thorn, No. 26.	442	do.	1,485	29	1,052	448	1,495	1,514	150
10 Ohio	Thorn, No. 5.	443	Bridgeport-2	1,399	27	1,043	457	1,488	1,514	100
11 Shaffer & Smathers	P. Finley, No. 11.	442	Kirkwood	1,517	16	1,074	426	.....	1,562	.....
12 Shaffer & Smathers	P. Finley, No. 5.	449	Bridgeport-2	1,900	20	1,049	903	923	923	50
13 Shaffer & Smathers	P. Finley, No. 2.	448	Kirkwood	1,510	19	1,061	439	.....	1,536	.....
14 Shaffer & Smathers	P. Finley, No. 12.	445	Bridgeport-2	1,892	30	1,033	467	1,483	922	100
15 Shaffer & Smathers	P. Finley, No. 14.	448	Kirkwood-1	1,478	20	1,033	467	1,483	.....	75
16 Ohio	Thorn, No. 22.	448	Kirkwood-2	1,518	20	1,073	427	1,523	1,560	.....
		448	Buchanan	1,528	12	880	620	.....	1,364	.....
		452	do.	1,270	.....	818	632	1,276	1,287	50
17 Ohio	Thorn, No. 29.	452	do.	1,272	68	820	680	.....	.....	.....
18 Ohio	Thorn, No. 1.	452	Kirkwood	1,480	21	1,028	472	1,490	1,501	120
19 Ohio	Thorn, No. 3.	451	Bridgeport-2.	903	21	451	.....	1,049	924	Gas, 1,488 feet.
20 Ohio	Thorn, No. 23.	451	do.	885	.....	434	066	.....	913	Wall abandoned.
		451	Buchanan	1,275	.....	824	676	1,238	1,301	100
21 Ohio	Thorn, No. 34.	451	do.	1,242	85	791	709	.....	.....	.....
		451	Kirkwood	1,471	60	1,020	480	1,506	1,531	Gas, 1,505 feet.
22 Ohio	Thorn, No. 24.	450	Buchanan	1,290	.....	840	663	1,294	1,304	150

9—
N. W..S. W..
17—

N. E..

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Name.		Sand.				Initial product—barrels.	Remarks.	
							Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			Oil depth—feet.
17— N. E...	23	Ohio.....	Thorn, No. 7.....	450	Buchanan.....	912	28	402	1,038	912	940	.....	Well abandoned.
	24	Ohio.....	Thorn, No. 27.....	454	do.....	1,265	.....	811	689	1,278	1,284	200	.....
	25	Ohio.....	Thorn, No. 19.....	453	do.....	1,270	.....	817	683	1,276	1,289	200	.....
	26	Ohio.....	Thorn, No. 8.....	456	do.....	1,265	14	809	691	1,265	1,279	.....	.....
	27	Ohio.....	Thorn, No. 30.....	457	do.....	1,256	100	799	701	.....	.....	.....	.....
	28	Ohio.....	Thorn, No. 10.....	462	Kirkwood.....	1,498	28	1,041	459	1,507	1,526	400	Gas, 1,503 feet.
	29	Ohio.....	Thorn, No. 31.....	463	Buchanan.....	1,263	18	801	699	1,264	1,281	350	.....
	30	Ohio.....	Thorn, No. 16.....	454	Kirkwood.....	1,505	24	1,042	458	1,510	1,534	200	Gas, 1,512 feet.
	31	Ohio.....	Thorn, No. 18.....	461	Buchanan.....	1,250	.....	796	704	1,252	1,268	200	.....
	32	Ohio.....	Thorn, No. 15.....	466	do.....	1,254	.....	793	707	1,258	1,280	200	.....
	33	Ohio.....	Thorn, No. 11.....	469	do.....	1,247	.....	781	719	1,250	1,265	250	.....
	34	Ohio.....	Thorn, No. 33.....	469	do.....	1,242	83	773	727	1,250	1,261	250	.....
	35	Ohio.....	Thorn, No. 2.....	473	Kirkwood.....	1,521	26	1,032	448	1,530	1,547	150	Gas, 1,525 feet.
	36	Ohio.....	Thorn, No. 32.....	473	Buchanan.....	1,254	11	781	719	1,254	1,365	.....	.....
	37	Ohio.....	Thorn, No. 12.....	473	Kirkwood.....	1,534	24	1,061	439	1,540	1,561	200	Gas, 1,536 feet.
	38	Ohio.....	Thorn, No. 4.....	473	Buchanan.....	1,252	19	779	721	1,258	1,271	200	.....
	39	Ohio.....	Thorn, No. 36.....	473	Bridgeport-3.....	1,250	100	777	723	1,032	960	.....	Well abandoned.
					Buchanan.....	1,250	100	777	723	1,032	960	200	Gas, 1,475 feet. Salt water 1,537 feet.
					do.....	1,470	20	997	563	1,473	1,537	.....	.....
40	Ohio.....	Thorn, No. 39.....	465	Bridgeport.....	880	110	415	1,085	.....	.....	.....	.....	.....
41	Ohio.....	Thorn, No. 6.....	465	Buchanan.....	1,246	29	781	719	1,246	1,275	200	.....	.....
42	Ohio.....	Thorn, No. 37.....	470	do.....	1,236	46	771	729	.....	.....	1,282	.....	.....
					do.....	1,253	87	783	717	.....	.....	.....	.....
43	Ohio.....	Thorn, No. 38.....	479	Kirkwood.....	1,523	67	1,053	447	1,525	1,802	300	Gas, 1,525 feet.	.....
44	Ohio.....	Thorn, No. 9.....	486	Buchanan.....	1,278	72	799	701	.....	.....	.....	.....	.....
					Kirkwood.....	1,540	32	1,061	439	1,543	1,572	250	Gas, 1,547 feet.
					Buchanan.....	1,290	21	804	696	.....	1,311	.....	.....
					Bridgeport.....	1,950	230	459	1,041	.....	.....	.....	.....
45	Ohio.....	Thorn, No. 40.....	491	Buchanan.....	1,325	60	834	666	1,401	.....	.....	.....	.....
					Kirkwood.....	1,555	24	1,064	436	1,555	1,579	70	Gas, 1,560 feet.

46	Ohio.....	Thorn, No. 13.....	493	Buchanan.....	1,318	17	825	675	1,319	1,335	225
47	Ohio.....	Thorn, No. 14.....	494	do.....	1,297	803	697	1,305	1,314	200	
48	Ohio.....	Thorn, No. 17.....	473	do.....	1,272	799	701	1,276	1,288	200	
49	Ohio.....	Thorn, No. 28.....	459	do.....	1,294	835	665	1,298	1,311	100	
1	Shaffer & Smathers.....	W. E. Finley, No. 40.....	417	Kirkwood-1.....	1,480	35	1,033	467	1,515	100	
2	Shaffer & Smathers.....	W. E. Finley, No. 27.....	447	Kirkwood-2.....	1,580	39	1,133	367	1,624		No. record.
3	Shaffer & Smathers.....	W. E. Finley, No. 2.....	447	Bridgeport-2.....	899	26	452	1,048	914	925	Well abandoned.
4	Shaffer & Smathers.....	W. E. Finley, No. 16.....	448	Kirkwood.....	1,455	35	1,037	463	936		
5	Shaffer & Smathers.....	W. E. Finley, No. 4.....	459	Bridgeport-2.....	1,258	15	474	1,026	936		
6	Shaffer & Smathers.....	W. E. Finley, No. 20.....	459	Buchanan.....	1,504	15	799	701	1,258	150	
7	Shaffer & Smathers.....	W. E. Finley, No. 6.....	458	Kirkwood.....	1,288	14	1,045	455	1,258		
8	Shaffer & Smathers.....	W. E. Finley, No. 19.....	459	Buchanan.....	1,350	19	830	670	1,294	1,302	100
9	Shaffer & Smathers.....	W. E. Finley, No. 18.....	453	do.....	1,510	21	891	609			
10	Shaffer & Smathers.....	W. E. Finley, No. 7.....	456	Kirkwood.....	1,508	25	1,055	445	1,508		
11	Shaffer & Smathers.....	W. E. Finley, No. 21.....	448	Buchanan.....	1,317	38	861	633	1,321		Gas, 1,508 feet.
12	Shaffer & Smathers.....	W. E. Finley, No. 1.....	449	Kirkwood.....	1,489	68	1,041	459	1,553		No record.
13	Shaffer & Smathers.....	W. E. Finley, No. 23.....	450	Kirkwood.....	1,485	33	1,053	465			
14	Shaffer & Smathers.....	W. E. Finley, No. 28.....	457	do.....	1,457	45	1,050	470	1,505	1,532	
15	Shaffer & Smathers.....	W. E. Finley, No. 31.....	462	do.....	1,523	23	1,061	439	1,528	1,946	600
16	Shaffer & Smathers.....	W. E. Finley, No. 37.....	450	Kirkwood-2.....	1,492	31	1,042	458	1,507		
17	Shaffer & Smathers.....	W. E. Finley, No. 34.....	451	Kirkwood-1.....	1,532	26	1,082	418	1,558		
18	Shaffer & Smathers.....	W. E. Finley, No. 22.....	450	Buchanan.....	1,336	79	885	615			Salt water, 1,336 feet.
19	Shaffer & Smathers.....	W. E. Finley, No. 39.....	463	Kirkwood-1.....	1,546	24	1,095	405	1,547		
20	Shaffer & Smathers.....	W. E. Finley, No. 8.....	457	Kirkwood-2.....	1,557	16	1,136	364	1,612		
21	Shaffer & Smathers.....	W. E. Finley, No. 23.....	460	Kirkwood-1.....	1,522	22	1,072	428			
22	Shaffer & Smathers.....	W. E. Finley, No. 9.....	469	Kirkwood-2.....	1,566	20	1,116	384	1,608		No record.
23	Shaffer & Smathers.....	W. E. Finley, No. 17.....	476	Buchanan.....	1,340	883	617	1,350			
24	Shaffer & Smathers.....	W. E. Finley, No. 5.....	479	do.....	1,536	12	1,079	421	1,548		
25	Shaffer & Smathers.....	W. E. Finley, No. 38.....	479	do.....	1,537	76	1,077	423	1,616		
26	Ohio.....	Diver, No. 6.....	470	Buchanan.....	1,317	22	848	652	1,349		
27	Ohio.....	Diver, No. 4.....	471	do.....	1,345	15	869	631			
28	Ohio.....	Diver, No. 13.....	473	do.....	1,580	64	1,04	396	1,580	1,644	
29	Ohio.....	Diver, No. 1.....	473	Kirkwood.....	1,339	21	860	640	1,345	1,368	200
30	Ohio.....	Diver, No. 9.....	470	Stray.....	1,440	961	539				Salt water.
31	Ohio.....	Diver, No. 15.....	469	Kirkwood-1.....	1,578	33	1,099	401	1,584		
				Kirkwood-2.....	1,630	30	1,151	349	1,660		
				McClosky.....	1,840	17	361	139	1,840	1,880	
				Buchanan.....	1,289	30	819	681	1,306		
				do.....	1,270	30	799	701	1,300		
				do.....	1,270	65	797	703			Salt water, 1,345 feet.
				do.....	1,345	30	872	628			No record.
				Buchanan.....		69	801	699			
				Kirkwood.....	1,270	29	1,008	432	1,574	375	500

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
17— N. W..	32	Ohio.....	Diver, No. 3.....	469	Buchanan.....	1,272	68	808	692	.....	1,341	.....	No record.....
	33	Ohio.....	Diver, No. 10.....	464	do.....	1,291	20	827	673	.....	1,311	.....	Salt water, 1,320 feet.....
	34	Ohio.....	Diver, No. 8.....	464	do.....	1,280	84	816	684	.....	1,311	.....	.....
	35	Ohio.....	Diver, No. 14.....	464	Kirkwood.....	1,537	72	829	671	.....	1,626	150	.....
	36	Ohio.....	Diver, No. 7.....	455	Buchanan.....	1,284	43	829	671	.....	1,545	.....	.....
	37	Ohio.....	Diver, No. 11.....	462	Kirkwood.....	1,526	19	814	686	.....	1,545	.....	.....
	38	Ohio.....	Diver, No. 5.....	453	Buchanan.....	1,276	72	814	686	.....	1,563	300	.....
	39	Ohio.....	Diver, No. 2.....	464	Kirkwood.....	1,526	28	1,064	436	.....	1,563	.....	.....
	40	Ohio.....	Diver, No. 12.....	464	Buchanan.....	1,270	27	817	683	.....	1,563	.....	No record.....
	1	Shaffer & Smathers.....	W. E. Finley, No. 13.....	480	Buchanan.....	1,364	88	800	700	.....	1,553	.....	.....
S. W..	2	Shaffer & Smathers.....	W. E. Finley, No. 10.....	483	Kirkwood.....	1,510	35	1,046	454	.....	1,553	.....	.....
	3	Shaffer & Smathers.....	W. E. Finley, No. 14.....	489	do.....	1,324	25	844	636	.....	1,326	.....	.....
	4	Shaffer & Smathers.....	W. E. Finley, No. 11.....	502	do.....	1,320	30	837	663	.....	1,327	.....	.....
	5	Shaffer & Smathers.....	W. E. Finley, No. 21.....	504	do.....	1,320	105	839	661	.....	1,340	.....	No "Finley" sand present.....
	6	Shaffer & Smathers.....	W. E. Finley, No. 15.....	495	Kirkwood-2.....	1,648	12	1,159	341	.....	1,706	.....	.....
	7	Shaffer & Smathers.....	W. E. Finley, No. 12.....	495	Buchanan.....	1,322	25	840	660	.....	1,357	.....	.....
	8	Ohio.....	Clark, No. 6.....	508	do.....	1,357	9	855	645	.....	1,366	.....	.....
	9	Ohio.....	Clark, No. 3.....	515	do.....	1,351	24	847	653	.....	1,375	.....	.....
	10	Ohio.....	Clark, No. 2.....	506	do.....	1,336	20	841	659	.....	1,356	.....	.....
	11	Ohio.....	Clark, No. 4.....	525	do.....	1,365	18	857	643	.....	1,370	150	.....
	12	Ohio.....	Clark, No. 5.....	527	do.....	1,355	28	840	660	.....	1,383	300	.....
	13	Ohio.....	Clark, No. 1.....	517	do.....	1,339	25	833	667	.....	1,374	.....	.....
	14	Ohio.....	Rogers, No. 8.....	512	do.....	1,385	20	860	640	.....	1,364	150	.....
	15	Ohio.....	Rogers, No. 15.....	508	do.....	1,360	20	843	657	.....	1,397	400	.....
	16	Ohio.....	Rogers, No. 17.....	510	do.....	1,370	10	873	627	.....	1,381	250	.....
	17	Ohio.....	Rogers, No. 10.....	509	do.....	1,337	15	816	638	.....	1,409	225	.....
	18	Ohio.....	Rogers, No. 14.....	487	do.....	1,325	15	816	634	.....	1,373	200	.....
					do.....	1,317	15	830	670	.....	1,352	250	.....
					do.....	1,317	15	830	670	.....	1,323	300	.....

19 Ohio	Rogers, No. 13.	527	...	1,354	12	827	673	1,361	1,366	250	...
20 Ohio	Rogers, No. 12.	491	...	1,319	...	828	672	1,328	1,338	275	...
21 Ohio	Rogers, No. 11.	490	...	1,322	23	832	668	1,328	1,345	150	...
22 Ohio	Rogers, No. 9.	489	...	1,312	...	836	677	1,320	1,332	250	...
23 Ohio	Rogers, No. 7.	504	...	1,310	18	806	694	1,312	1,328	200	...
	Bridgeport.		...	974	16	773	1,027	980	...	...	...
	Buchanan.		...	1,295	30	794	706	1,295	...	...	...
	Stray		...	1,353	22	852	648	...	...	...	Salt water
24 Ohio	Kirkwood.	501	...	1,575	15	1,074	426	...	...	...	...
	Tracey		...	1,740	10	1,239	261	...	...	...	...
	McClosky		...	1,894	21	1,393	107	1,894	2,007	200	Gas, 1,894 feet.
	Buchanan-1.		...	1,283	...	786	714	1,288	...	350	...
25 Ohio	Buchanan-2.	497	...	1,312	...	815	685	1,312	...	...	...
26 Ohio	Rogers, No. 3.	477	...	1,288	26	811	689	1,293	1,314	250	...
27 Ohio	Rogers, No. 5.	478	...	1,308	25	830	670	1,312	1,333	200	...
28 Ohio	Rogers, No. 6.	478	...	1,302	22	822	678	1,310	1,324	200	...
29 Ohio	Rogers, No. 4.	480	...	1,287	...	814	686	1,290	1,311	250	...
30 Ohio	Rogers, No. 2.	473	...	1,280	...	797	703	1,285	1,286	100	...
31 Ohio	Rogers, No. 1.	483	...	1,290	90	807	693	...	...	...	...
	Kirkwood.		...	1,569	16	1,086	414	1,580	1,782	30	Gas, 1,582 feet.
1 Gray & Watson.	School House Lot.	514	...	985	341	475	1,025	...	...	...	No record.
2 Snowden Bros.	O'Donnel, No. 20.	510	...	1,332	10	822	678	...	1,312	400	Salt water, 1,050 and 1,190 feet.
3 Snowden Bros.	O'Donnel, No. 19.	514	...	1,025	...	511	959	...	...	...	Salt water, 1,000 and 1,180 feet.
4 Snowden Bros.	O'Donnel, No. 21.	513	...	1,329	16	815	685	1,337	1,345	500	...
5 Snowden Bros.	O'Donnel, No. 22.	506	...	1,015	...	502	998	...	...	...	Salt water, 1,075 and 1,200 feet.
6 Snowden Bros.	O'Donnel, No. 17.	506	...	1,000	...	494	1,006	...	...	...	Salt water, 820 and 1,090 feet.
	Stray		...	1,210	...	704	796	...	...	...	...
	Buchanan		...	1,340	13	834	666	...	1,353	300	...
7 Snowden Bros.	Bridgeport.	510	...	960	80	450	960	...	...	Show	...
8 Snowden Bros.	Buchanan	506	...	1,315	25	805	695	1,331	1,340	300	...
	do.		...	1,294	25	788	712	1,305	1,319	400	...
	Bridgeport.		...	805	10	307	1,193	...	...	...	...
	do.		...	962	86	464	1,036	970	...	...	Hole full of salt water, 990 feet.
	do.		...	1,050	20	552	948	...	...	...	...
	do.		...	1,095	40	597	908	...	...	...	...
	Stray		...	1,130	25	532	848	...	...	...	...
9 Snowden Bros.	Buchanan	498	...	1,280	115	782	718	1,298	...	...	Salt water, 1,300 feet.
	Stray		...	1,425	13	927	573	...	...	...	...
	Kirkwood-1.		...	1,593	32	1,095	405	1,600	...	Show	...
	Kirkwood-2.		...	1,638	12	1,140	360	...	...	...	...
	Kirkwood-3.		...	1,676	52	1,178	322	...	...	...	...
	Tracey		...	1,757	8	1,259	241	...	...	...	...
	McClosky		...	1,835	338	1,337	163	1,860	2,223	Show	Limestone

S. E.

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
17—S. E...	10	Snowden Bros.	O'Donnel, No. 15.	500	Bridgeport-3	1,000	28	500	1,000
					Buchanan	1,297	953	797	703
					Bridgeport	967	10	474	1,026
					do.	995	160	488	1,012
					do.	1,298	72	516	984
11	Snowden Bros.	O'Donnel, No. 25.	479	Buchanan	1,506	11	819	681	1,305	.....	.....	.....
				Kirkwood-1	1,534	4	1,027	473	1,506	.....	.....	.....
				Kirkwood-2	1,564	25	1,055	445	.....	.....	.....	.....
				Kirkwood-3	1,601	5	1,085	415	1,566	.....	.....	.....
				Kirkwood-4	1,601	5	1,122	378	1,600	.....	.....	.....
12	Snowden Bros.	O'Donnel, No. 8.	494	Buchanan	1,283	29	789	711	1,290	.....	.....	.....
				Bridgeport-2	940	60	444	1,056	.....	.....	.....	.....
				Stray	1,120	624	624	876	.....	.....	.....	.....
				Buchanan	1,281	10	785	715	1,291	.....	.....	.....
				Bridgeport	960	40	479	1,021	.....	.....	.....	.....
14	Snowden Bros.	O'Donnel, No. 18.	481	Stray	1,220	33	801	699	.....	.....	.....	.....
				Buchanan	1,318	5	837	663	.....	.....	.....	.....
				do.	1,282	31	801	699	.....	.....	.....	.....
				Bridgeport-2	949	31	801	699	.....	.....	.....	.....
				Buchanan	1,282	31	801	699	.....	.....	.....	.....
15	Snowden Bros.	O'Donnel, No. 1.	481	Bridgeport	942	18	461	839	942	.....	.....	.....
				do.	1,015	48	534	966	.....	.....	.....	.....
				Buchanan	1,325	48	844	656	1,325	.....	.....	.....
				Kirkwood-1	1,560	25	1,079	421	1,560	.....	.....	.....
				Kirkwood-2	1,628	20	1,147	353	1,628	.....	.....	.....
16	Snowden Bros.	O'Donnel, No. 26.	481	Kirkwood-3	1,665	35	1,184	316	.....	.....	.....	.....
				Tracey-1	1,710	15	1,229	271	.....	.....	.....	.....
				Tracey-2	1,730	2	1,249	251	1,730	.....	.....	.....
				Stray	1,283	2	802	698	.....	.....	.....	.....
				Stray	1,283	2	802	698	.....	.....	.....	.....
17	Snowden Bros.	O'Donnel, No. 2.	481	Bridgeport-3	1,000	28	500	1,000	.....	.....	.....	.....
				Buchanan	1,297	953	797	703	.....	.....	.....	.....
				Bridgeport	967	10	474	1,026	.....	.....	.....	.....
				do.	995	160	488	1,012	.....	.....	.....	.....
				do.	1,298	72	516	984	.....	.....	.....	.....

[illegible]

2	Ohio.....	Miller, No. 20.....	503	Bridgeport..... Buchanan-1..... Buchanan-2..... Tracey.....	1, 450 1, 595 1, 904 1, 100	310 30 30 150	497 553 408 99	1, 003 1, 926 1, 904	..... ..... 125 .....	..... ..... Gas, 1,904 feet.
3	Ohio.....	Miller, No. 21.....	506	Bridgeport..... Buchanan..... Stray..... Kirkwood.....	1, 400 1, 700 1, 900 1, 900	150 150 16 26	591 894 306 394	906 606 1, 900 1, 918	..... ..... 100 110	..... Salt water, 1,710 feet. Gas, 1,904 feet. Drilling.
4	Ohio.....	Miller, No. 22.....	496	Kirkwood.....	1, 866	26	120	1, 866	110	Gas, 1,866 feet.
5	Ohio.....	Miller, No. 16.....	486	Stray.....	1, 720	16	256	1, 882	.....	.....
6	Ohio.....	Miller, No. 17.....	476	Kirkwood.....	1, 851	37	125	1, 851	25	Gas, 1,851 feet.
1	Shaffer & Smathers.....	Tabscott, No. 1.....	481	Buchanan..... Stray..... do..... Kirkwood..... Stray..... Kirkwood.....	1, 410 1, 510 1, 686 1, 865 1, 765 1, 820	50 1, 029 1, 205 33 1, 245 1, 300	571 471 295 1, 854 255 200	1, 888 1, 686 1, 865 1, 245 1, 998	..... ..... Show ..... ..... .....	..... Salt water. Salt water. Salt water. Gas.
2	Ohio.....	Millhouse (Acct. 2), No. 1.....	520	Kirkwood.....	1, 820	1, 300	200	1, 998	.....	.....
1	Ohio.....	J. Gillespie, No. 1.....	467	do.....	1, 850	4	1, 333	117	1, 852	Show Well abandoned.
2	Shaffer & Smathers.....	Tabscott, No. 2.....	479	do.....	1, 865	31	1, 386	114	2, 013	Show do.
				Bridgeport.....	830	40	354	1, 146	.....	.....
				do.....	880	40	401	1, 096	.....	Salt water.
				do.....	930	20	454	1, 046	.....	do.
				do.....	1, 045	230	569	931	.....	do.
1	Snowden Bros.....	H. Seed, No. 1.....	476	Buchanan..... Stray.....	1, 450 1, 532	40 5	974 1, 056	526 444	.....	Salt water, 1,460 feet. Red rock, 1,700 and 1,810 feet.
				do.....	1, 820	10	1, 344	156	.....	Salt water.
				Kirkwood.....	1, 862	12	1, 386	114	1, 862	1, 885
				Bridgeport.....	831	129	341	1, 159	.....	Salt water, 851 feet.
				do.....	1, 165	105	675	825	.....	Salt water, 1,166 feet.
				do.....	1, 295	25	805	695	.....	.....
				Buchanan-1.....	1, 425	187	985	565	.....	Salt water, 1,650 feet.
				Buchanan-2.....	1, 620	30	1, 130	370	.....	Red rock, 1,650 and 1,785 feet.
2	Snowden Bros.....	H. Seed, No. 2.....	490	Stray..... do..... Kirkwood..... Kirkwood.....	1, 730 1, 802 1, 845 1, 881	20 26 20 17	1, 240 1, 312 1, 355 1, 391	280 188 145 109	..... ..... 1, 882 1, 900	..... ..... Salt water, 1,360 feet. Known as Seed sand Drilling.
3	Snowden Bros.....	H. Seed, No. 5.....	501	do.....	1, 881	.....	.....	.....	.....	do.
4	Maugh.....	H. P. Seed, No. 2.....	504	do.....	.....	.....	.....	.....	.....	No record.
5	Maugh.....	H. P. Seed, No. 1.....	505	do.....	.....	.....	.....	.....	.....	do.
6	Snowden Bros.....	H. K. Seed, No. 4.....	510	do.....	.....	.....	.....	.....	.....	do.

3	Snowden.....	Clevey, No. 1.....	510	Bridgeport.....	770	25	2601	1,240		Salt water, 795 feet		
				do	890	15	380	1,120		Salt water, 905 feet		
				do	1,010	10	500	1,000				
				do	1,065	15	555	945				
				do	1,140	193	630	870		Salt water, 1,140 feet		
4	Ohio.....	School House Lot, No. 2.....	536	Stray	1,463	20	953	547		Gas sand		
				Buchanan-1	1,545	10	1,035	465				
				Buchanan-2	1,567	33	1,057	443		1,600	Dry	
				Bridgeport-2	912	21	376	1,124				
				Bridgeport-3	1,020	25	484	1,016			75	
2	Ohio.....	E. Combs (Acct. 1), No 7.....	532	Bridgeport-1	815	20	283	1,217	820			
				Bridgeport-3	1,060	8	528	972	1,062		30 Salt water, 1,068 feet	
				Bridgeport-1	830	25	293	1,207	830			
				Bridgeport-2	992	11	455	1,045			10	
				Kirkwood.....	1,412	44	890	610	1,414	1,461	240	No record
5	Ohio.....	E. Combs (Acct. 2), No. 5.....	537	Bridgeport-1	834	18	333	1,167	860			
				Bridgeport-3	1,037	20	516	984			75	Salt water, 1,080 feet
				Kirkwood	1,420	35	899	601				Gas
				McClosky	1,643	11	1,122	378		1,656	Gas	Gas, 1,613 feet, 1,000,000 cu. ft. gas first day
				Bridgeport-1	842	18	316	1,184	850			100
8	Ohio.....	E. Combs (Acct. 2), No. 3.....	526	Bridgeport-3	1,037	20	511	989	1,047			
				Bridgeport-1	835	20	312	1,188				
				Bridgeport-3	1,021	41	498	1,062	1,056			50
				Kirkwood	1,385	25	863	637	1,391	1,414	50	Salt water, 1,063 feet
				Bridgeport-1	824	20	308	1,192	830			
11	Ohio.....	E. Combs (Acct. 2), No 6.....	516	Bridgeport-3	1,038	20	522	978	1,030			
				"Gas",	1,335		800	691				40
				Kirkwood	1,396	48	870	630	1,410	1,430		Gas, 1,335 feet
				Bridgeport	825	140	299	1,201				
				Kirkwood	1,396	48	870	630				
14	Int'l Oil & Gas Co.....	E. Fyffe, No. 1.....	526	Bridgeport-1	832	33	305	1,195				
				Bridgeport-2	902	46	375	1,125			30	Gas, 1,335 feet
				Bridgeport-3	964	38	437	1,063				
				Bridgeport	740	40	219	1,281				
				do	840	72	319	1,181				
15	Int'l Oil & Gas Co.....	E. Fyffe, No. 12.....	521	Buchanan	1,100	125	579	921		Salt water, 1,115 feet		
				Kirkwood	1,425	50	904	596				
				McClosky	1,660		1,130	361	1,665	1,665		Gas, 1,660 feet
				Bridgeport-1	850	110	329	1,171				
				Bridgeport-3	972	38	451	1,049				
16	Int'l Oil & Gas Co.....	E. Fyffe, No 4.....	521	Kirkwood	1,305	58	874	626				
				Bridgeport	735	60	228	1,172				Salt water, 745 feet
				do	835	70	328	1,172				
				Buchanan	1,085	135	578	922				
				Kirkwood	1,431	38	924	576				
17	Int'l Oil & Gas Co.....	E. Fyffe, No. 11.....	507	Tracey	1,580		1,073	427				
				McClosky	1,659		1,152	348	1,666	1,672		Gas, 1,659 feet

[illegible]

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
31— N. E..	40	Ohio.	McCleave, No. 4.	518	Kirkwood.	1,492	47	974	526	1,500	150	Gas, 1,720 feet.
					McClosky.	1,721	5	1,203	297	1,721		
	41	Ohio.	McCleave, No. 3.	528	Kirkwood.	1,467	52	939	561	1,490	100	
					McClosky.	1,698	10	1,170	330			
	42	Ohio.	McCleave, No. 5.	536	Kirkwood.	1,462	42	926	574	1,463	125	
	43	Ohio.	McCleave, No. 1.	534	Bridgeport-2.	1,867	8	333	1,167	1,867	100	Well abandoned.
					Bridgeport-3.	1,073	6	539	961			
	44	Ohio.	McCleave, No. 2.	534	Kirkwood.	1,459	44	925	575			
					McClosky.	1,691	10	1,157	343	1,701		
	45	Ohio.	Clark, No. 11.	534	Kirkwood.	1,447	13	913	587	1,465	500	Gas, 1,691 feet.
					McClosky.	1,675	13	1,141	339	1,675	125	Gas, 1,670 feet.
	46	Ohio.	Clark No. 4.	533	Bridgeport.	940	17	407	1,003			Well abandoned.
					do.	1,024	11	491	586	1,043		
	47	Ohio.	Clark, No. 12.	531	Kirkwood.	1,445	42	914	586	1,447	150	
					Bridgeport.	990	60	461	1,039			
	48	Ohio.	Clark, No. 17.	529	Kirkwood.	1,442	31	913	587			
					McClosky.	1,660	10	1,131	369			
					Bridgeport.	830	12	304	1,196	1,670	Gas	Gas, 1,660 feet.
	49	Ohio.	Clark, No. 8.	526	do.	1,040	10	514	986			
					Kirkwood.	1,404		878	622	1,414		
	50	Ohio.	Clark, No. 18.	520	do.	1,424	39	904	596			
					McClosky.	1,654	10	1,134	366	1,665	Gas	
	51	Ohio.	Clark, No. 7.	522	Bridgeport.	820	25	298	1,202			
	52	Ohio.	Clark, No. 9.	522	do.	1,054	6	532	988	1,062		
					Kirkwood.	1,404		882	618	1,414		
					Bridgeport-1.	1,830	15	304	1,196	1,430		
	53	Ohio.	Clark, No. 6.	526	Bridgeport-2.	924	10	408	1,092			
					Bridgeport-3.	1,010	41	484	1,016	1,051		
					Bridgeport-1.	805	15	283	1,217			
					Bridgeport-2.	885	12	373	1,127			
	54	Ohio.	Clark, No. 5.	522	Bridgeport-3.	995	43	473	1,027	1,045		

55	Ohio	Clark, No. 16.	531	Bridgeport.....	1,025	24	504	996	1,380	1,406	100	
56	Ohio	Clark, No. 15.	520	"Gas".....	1,372	34	851	649	1,395	1,426	125	
57	Ohio	Clark, No. 2.	522	Bridgeport-1.....	812	34	872	1,210			Show	
58	Ohio	Clark, No. 13.	523	Bridgeport-2.....	905	23	383	1,117	982	1,007		
59	Ohio	Clark, No. 14.	523	Bridgeport-3.....	1,025	25	460	1,040	996	1,030	170	
60	Ohio	Clark, No. 10.	523	"Gas".....	1,925	38	893	631	1,395	1,439	250	Gas, 1,390 feet.
61	Ohio	Clark, No. 1.	523	Bridgeport-1.....	1,040	23	517	983	1,040	1,063	200	
				Bridgeport-2.....	826	10	303	1,197				
				Bridgeport-3.....	911	20	388	1,112				
62	Ohio	Clark, No. 3.	528	Bridgeport-1.....	820	20	292	1,208	981			
				Bridgeport-2.....	909	25	381	1,119				
				Bridgeport-3.....	1,000	30	472	1,028	1,030	1,030		
1	Ohio	Delaney, No. 6.	502	Kirkwood.....	1,437	40	935	565	1,445			Flowing well.
2	Ohio	Delaney, No. 1.	500	McClosky.....	1,655	15	153	347	1,655	1,670	450	Gas, 1,354 feet.
				"Gas".....	1,354	16	854	646			40	
3	Ohio	Delaney, No. 5.	502	Kirkwood-1.....	1,421	9	919	581	1,430			Gas, 1,421 feet.
4	Ohio	Delaney, No. 4.	473	Kirkwood-2.....	1,437	38	935	565	1,437	1,475	400	
5	Ohio	Delaney, No. 3.	480	"Gas".....	1,343	12	870	630	1,343			
				Kirkwood.....	1,440	26	967	533	1,440	1,471	250	
6	Ohio	Delaney, No. 7.	500	"do".....	1,426	28	937	563	1,426	1,460	65	
7	Ohio	Adkins, No. 1.	483	McClosky.....	1,438	40	938	562	1,441		25	
8	Ohio	Delaney, No. 8.	483	Kirkwood.....	1,656	11	156	344		1,673	42	
9	Ohio	Delaney, No. 2.	482	"do".....	1,422	14	939	561	1,422			
				McClosky.....	1,453	28	970	530	1,453	1,486	50	Gas, 1,395 feet.
				"Gas".....	1,395	3	913	587	1,395			water, 1,030 feet.
				Kirkwood.....	1,450	21	968	532	1,450		80	
				Bridgeport.....	755	35	291	1,209				Salt water
				"do".....	845	5	381	1,119				
				"do".....	860	5	396	1,104				
				"do".....	920	80	456	1,044	925			
				"do".....	1,015	25	551	949				
				"do".....	1,042	43	578	922				
10	Central Refining Co.	P. King, No. 8.	464	Buehanan.....	1,130	50	666	834				Salt water
				Buehanan-1.....	1,218	50	754	746				"do
				Buehanan-2.....	1,390	15	916	584	1,380		Show	
				Stray.....	1,458	41	994	506	1,478			
				Kirkwood-1.....	1,525	5	1,061	439				
				Kirkwood-2.....	1,551	22	1,087	413	1,551		Show	
				Kirkwood-3.....	1,602	3	1,138	362				
				Tracey.....	1,688	5	1,224	276	1,688	1,693	Show	
				McClosky.....								

N. W.-

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.			
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.							
31—	N. W..	11 Central Refining Co.	P. King, No. 9	477	Bridgeport.....	775	45	298	1,202	945	.....	.....	Salt water, 1,020 feet.			
					do.....	945	105	468	1,032	907	.....	.....	Salt water.			
N. W..					Buchanan.....	1,070	50	593	907	.....	.....	.....	.....	do.....		
					Stray.....	1,235	5	758	742	.....	.....	.....	.....	.....	.....	.....
					Gas.....	1,315	15	923	577	1,400	.....	.....	Show	.....	.....	.....
					Kirkwood-1.....	1,481	37	1,004	496	1,485	.....	.....	.....	.....	.....	.....
					Kirkwood-2.....	1,535	7	1,058	442	.....	.....	.....	.....	.....	.....	.....
					Kirkwood-3.....	1,565	12	1,088	412	.....	.....	.....	.....	.....	.....	.....
					Tracey.....	1,585	12	1,108	392	1,589	.....	.....	.....	.....	.....	Gas, 1,589 feet.
					Stray.....	1,630	.....	1,153	347	.....	.....	.....	.....	.....	.....	.....
					Kirkwood.....	1,515	.....	1,027	473	.....	.....	.....	.....	.....	.....	.....
					Bridgeport.....	1,095	75	513	987	.....	.....	.....	.....	.....	.....	Salt water.
					Buchanan.....	1,210	70	718	782	.....	.....	.....	.....	.....	.....	.....
					"Gas".....	1,445	15	953	547	.....	.....	.....	.....	.....	.....	Salt water.
					Kirkwood.....	1,534	31	1,042	458	1,565	.....	.....	.....	.....	.....	.....
					Bridgeport.....	785	80	298	1,202	995	.....	.....	Show	.....	.....	.....
					do.....	980	60	493	1,007	.....	.....	.....	.....	.....	.....	Hard sand.
					do.....	1,052	83	565	935	.....	.....	.....	.....	.....	.....	.....
14 Central Refining Co.			P. King, No. 5	487	Buchanan-1.....	1,145	145	658	842	.....	.....	.....	.....	.....
					Buchanan-2.....	1,305	35	818	682	.....	.....	.....	.....	.....	.....	.....
15 Central Refining Co.			P. King, No. 3	514	"Gas".....	1,421	15	934	566	.....	.....	.....	.....	.....
					Kirkwood.....	1,494	30	1,007	493	1,494	.....	1,524	30	.....	.....	.....
					do.....	1,558	30	1,044	456	.....	.....	.....	.....	.....	.....	.....
					Bridgeport.....	795	35	276	1,224	.....	.....	.....	Show	.....	.....	Salt water.
16 Central Refining Co.			P. King, No. 7	519	do.....	920	10	401	999	920	.....	.....	.....	.....
					Stray.....	1,020	100	501	501	.....	.....	.....	.....	.....	.....	.....
					Buchanan-1.....	1,175	5	656	844	.....	.....	.....	.....	.....	.....	.....
					Buchanan-2.....	1,235	85	716	784	.....	.....	.....	.....	.....	.....	.....
					Kirkwood.....	1,443	7	924	576	.....	.....	.....	.....	.....
					Kirkwood.....	1,510	39	991	509	1,530	.....	1,553	.....	.....	.....	.....

[illegible]

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
31—S. W.	16	Ohio.....	Kimmel, No. 15.....	539	Kirkwood.....	1,550	38	1,011	489	1,552	1,597	75	Gas, 1,555 feet.....	
	17	Ohio.....	Kimmel, No. 18.....	537	do.....	1,555	31	1,018	482	1,558	1,586	75	.....
	18	Ohio.....	Kimmel, No. 9.....	544	do.....	1,543	20	999	501	1,545	1,569	25	.....
S. E....	1	Ohio.....	S. Abernathy, No. 3.....	550	Kirkwood-1.....	1,545	12	995	505	1,551	1,586	25	.....
	2	Ohio.....	S. Abernathy, No. 3.....	550	Kirkwood-2.....	1,563	16	1,013	487	1,556	1,586	25	.....
	3	Ohio.....	Cullison, Lot No. 1.....	552	Kirkwood.....	1,522	38	966	534	1,540	1,567	25	No record.....	
	4	Ohio.....	Kimmel, No. 10.....	556	“Gas”.....	1,410	(?)	100	849	651	1,528	90	.....
	5	Ohio.....	E. Combs, No. 5.....	561	Bridgeport.....	860	20	314	1,186	860	1,588	25	.....
	6	Ohio.....	E. Combs, No. 4.....	546	Kirkwood.....	1,458	5	912	1,588	1,458	1,588	25	.....
	7	Ohio.....	E. Combs, No. 2.....	546	Bridgeport.....	1,995	15	449	1,051	1,000	1,588	25	.....
	8	Ohio.....	E. Combs, No. 2.....	546	“Gas”.....	1,375	11	829	671	1,051	1,000	25	Gas, 1,375 feet.....	
	9	Ohio.....	E. Combs, No. 7.....	546	McCloosky-1.....	1,682	5	1,136	364	1,699	1,717	300	Gas, 1,375 feet.....	
	10	Ohio.....	E. Combs, No. 7.....	546	McCloosky-2.....	1,699	9	1,153	347	1,699	1,717	300	Gas, 1,375 feet.....	
	11	Ohio.....	A. Combs, No. 1.....	525	.....	.....	.....	.....	.....	.....	.....	No record.....	No record.....
	12	Ohio.....	A. Combs, No. 3.....	525	.....	.....	.....	.....	.....	.....	.....	No record.....	No record.....
	13	Ohio.....	A. Combs, No. 2.....	521	.....	.....	.....	.....	.....	.....	.....	No record.....	No record.....
	14	Ohio.....	E. Combs, No. 8.....	520	McCloosky-1.....	1,642	4	1,122	378	.....	.....	Gas	Gas, 1,340 feet.....
	15	Ohio.....	E. Combs, No. 8.....	520	McCloosky-2.....	1,660	4	1,140	360	.....	1,664	Gas	Gas, 1,340 feet.....
	16	Ohio.....	E. Combs, No. 3.....	526	“Gas”.....	1,340	10	814	686	.....	1,664	Gas	Gas, 1,340 feet.....
	17	Ohio.....	E. Combs, No. 3.....	526	Kirkwood.....	1,440	10	914	586	1,440	1,440	17	Gas, 1,340 feet.....	
	18	Ohio.....	E. Combs, No. 6.....	525	Kirkwood-1.....	1,439	9	914	586	1,439	1,439	140	Gas, 1,340 feet.....	
	19	Ohio.....	E. Combs, No. 1.....	526	Kirkwood-2.....	1,453	11	928	572	1,533	1,533	140	Gas, 1,340 feet.....	
	20	Ohio.....	E. Combs, No. 9.....	536	“Gas”.....	1,345	25	819	681	1,370	1,370	Gas	Gas, 1,355 feet.....	
21	Ohio.....	E. Combs, No. 1.....	526	Kirkwood.....	1,450	42	914	586	.....	.....	Gas	Gas, 1,355 feet.....	
22	Ohio.....	E. Combs, No. 1.....	526	McCloosky-1.....	1,450	42	914	586	.....	.....	Gas	Gas, 1,355 feet.....	
23	Ohio.....	E. Combs, No. 9.....	536	McCloosky-2.....	1,685	10	1,149	351	1,690	1,700	75	Gas, 1,685 feet.....		
24	Ohio.....	E. Combs, No. 9.....	536	Kirkwood-1.....	1,450	25	916	584	.....	.....	Gas	Gas, 1,685 feet.....	
25	Ohio.....	E. Combs, No. 9.....	536	Kirkwood-2.....	1,480	20	946	554	.....	.....	Gas	Gas, 1,685 feet.....	
26	Ohio.....	E. Combs, No. 9.....	536	McCloosky-1.....	1,480	20	946	554	.....	.....	Gas	Gas, 1,685 feet.....	
27	Ohio.....	E. Combs, No. 9.....	536	McCloosky-2.....	1,682	10	1,148	352	1,683	1,692	60	Gas, 1,680 feet.....		
28	Ohio.....	E. Combs, No. 9.....	536	McCloosky.....	1,418	12	883	607	1,420	1,420	80	Gas, 1,418 feet.....		
29	Ohio.....	E. Combs, No. 9.....	536	Kirkwood-1.....	1,432	20	907	593	.....	.....	Gas	Gas, 1,418 feet.....	
30	Ohio.....	E. Combs, No. 9.....	536	Kirkwood-2.....	1,432	20	907	593	.....	.....	Gas	Gas, 1,418 feet.....	

[illegible]

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.							
32—	N. W.	Snowden Bros.	Perkins, No. 25.	498	Bridgeport.	760	15	262	1,238						
					do.	960	55	462	1,038						
					Buchanan	1,020	70	522	978						Salt water, 1,060 feet.
					Kirkwood-1	1,100	50	602	898						
					Kirkwood-2	1,356	9	858	642			1,372			
					Bridgeport.	1,369	13	871	629			1,408			
					Kirkwood	1,879	116	385	1,115					200	
					Kirkwood	1,848	34	834	666			1,350		125	Gas, 1,350 feet.
					Bridgeport.	810	24	300	1,200						
					do.	993	13	483	1,017						
					Petty, No. 1	1,007	31	497	1,003			1,008		25	
					Petty, No. 5	1,350	25	846	654			1,355		75	Gas, 1,360 feet.
					Petty, No. 9	855	23	481	1,019			855		100	
					Bridgeport.	1,360	36	855	645			1,360		200	
					Kirkwood.	832	10	327	1,173			835		50	
					Bridgeport.	992	38	487	1,013			995			
S. W.	1	Snowden Bros.	Perkins, No. 3.	507	do.	828	13	305	1,195			834		30	
					do.	1,022	28	499	1,001			1,040			
					Petty, No. 4	900	20	375	1,125			902		40	
					Petty, No. 2	1,023	18	498	1,002			1,025			
					Petty, No. 7	1,362	56	833	667			1,362		70	Gas, 1,287 feet.
					Bridgeport.	809		302	1,198						
					do.	910	10	403	1,097					150	Salt water, 1,037 feet.
					do.	1,030	7	523	977					Show	
					do.	800	5	295	1,205			805			
					do.	870	40	365	1,135			875			
					do.	932	21	427	1,073						
					do.	1,035	95	530	970						Salt water, 1,045 feet.
					"Gas"	1,290	20	785	715						Gas, 1,293 feet.
					Kirkwood	1,371	30	866	684			1,378			
					Stray	1,478	16	973	527			1,480			

3	Snowden Bros.....	Perkins, No. 2.....	480	Bridgeport.....	778	321	298	1,202	.....	.....	Slate, 796 to 800 feet.....
				..do.....	869	11	389	1,110	.....	100	
				..do.....	1,010	20	530	970	.....	
				..do.....	780	25	300	1,125	860	Show	
				..do.....	855	40	375	1,055	940	148	
				..do.....	925	25	445	930	.....	
4	Snowden Bros.....	Perkins, No. 21.....	480	..do.....	1,050	90	570	716	.....		Salt water, 1,055 feet.....
				"Gas".....	1,264	6	784	652	.....		Gas, 1,270 feet.....
				Kirkwood-1.....	1,328	9	848	.....		
				Kirkwood-2.....	1,339	51	859	641	1,408		
				Bridgeport.....	785	15	306	1,194	.....	
				..do.....	850	7	371	1,123	.....	
				..do.....	875	15	396	1,104	.....	
				..do.....	920	42	441	1,059	925	.....
				..do.....	1,020	85	541	959	1,045	.....	Salt water, 1,050 and 1,075 feet.....
5	Snowden Bros.....	Perkins, No. 17.....	479	Buchanan-1.....	1,108	28	629	871	.....	
				Buchanan-2.....	1,138	22	659	841	.....	
				"Gas".....	1,262	28	783	717	.....		Gas, 1,267 feet.....
				Kirkwood.....	1,350	45	629	1,351	.....	
				Tracey-1.....	1,450	10	971	529	1,461	.....
				Tracey-2.....	1,475	25	996	504	.....	
				Tracey-3.....	1,570	25	1,091	409	.....		Gas, 1,490 feet.....
				McClosky.....	1,640	.....	1,161	339	1,695	1,714	Gas, 1,580 feet.....
				Bridgeport.....	817	8	337	1,163	.....	
				..do.....	936	10	356	1,044	.....	
				..do.....	1,002	28	522	978	.....	
				"Gas".....	1,238	24	758	742	.....		Gas, 1,238 feet.....
6	Snowden Bros.....	Perkins, No. 9.....	480	.....	.....	.....	.....	.....	{	Gas	23,000,000 cu. ft. daily.....
7	Snowden Bros.....	Perkins, No. 1.....	501	Bridgeport.....	810	15	309	1,191	815	.....
				..do.....	932	103	431	1,099	.....	
				..do.....	808	20	307	1,133	810	Show	
				..do.....	900	30	401	999	.....	
				"Gas".....	1,030	90	531	969	1,030	Show	Salt water, 1,045 feet.....
8	Snowden Bros.....	Perkins, No. 20.....	499	..do.....	1,285	20	786	714	.....		Salt water, 1,280 feet.....
				Kirkwood.....	1,372	20	873	627	1,375	Show	
				Tracey.....	1,472	18	973	527	1,475	1,512	
				Bridgeport and Buchanan.....	1,061	99	530	964	.....		Salt water, 1,070 feet.....
				"Gas".....	1,320	20	795	705	.....		Gas, 1,325 feet.....
9	Snowden Bros.....	Perkins, No. 15.....	525	Kirkwood-1.....	1,404	21	879	621	1,404	.....
				Kirkwood-2.....	1,452	8	927	573	.....	
				Tracey.....	1,508	16	983	517	1,508	1,541	

15	Snowden Bros.	Perkins, No. 19.	529	Bridgeport..... Bridgeport and Bucanan "Gas" Kirkwood. Tracey McClosky. Bridgeport. do. do. "Gas"	910 1,050 1,333 1,407 1,431 1,515 1,686 840 900 1,070 1,340	461 115 12 30 18 10 157 319 379 549 819	381 979 804 878 622 986 343 1,181 1,121 951 651	930	Show	Salt water, 1,075 feet. Gas, 1,654 feet. Salt water, 1,070 feet. Gas, 1,340 feet. Salt water, 1,220 feet.
16	Snowden Bros.	Perkins, No. 14.	521	Kirkwood. Bridgeport. do. do. do. "Gas"	1,426 835 855 920 1,023 1,070 1,222 1,338 1,411 1,522 1,607 1,628 840 1,000	16 15 25 70 12 105 13 813 39 886 18 997 503 1,530 1,609 1,708 1,189 1,029	595 1,190 850 880 1,05 935 803 687 614 503 418 397 1,682 1,708 1,189 1,029	75	Show	Hole full water, 1,075 feet Gas, 1,347 feet.
17	Snowden Bros.	Perkins, No. 18.	525	"Gas" Kirkwood. Tracey McClosky-1 McClosky-2 Bridgeport. do.	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
18	Snowden Bros.	Perkins, No. 13.	529	"Gas" Kirkwood-1 Kirkwood-2 Bridgeport. do. "Gas" Kirkwood. Bridgeport. do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
19	Ohio	Lewis, No. 12.	518	do. "Gas" Kirkwood. Bridgeport. do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
20	Ohio	Lewis, No. 2.	512	do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
21	Ohio	Lewis, No. 15.	507	do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
22	Ohio	Lewis, No. 3.	512	do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
23	Ohio	Lewis, No. 11.	509	do. do. Kirkwood. Bridgeport. Kirkwood.	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
24	Ohio	Lewis, No. 14.	510	do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.
25	Ohio	Lewis, No. 1.	512	do. do. Kirkwood-1 Kirkwood-2	1,332 1,418 1,450 880 1,050 1,320 1,404 810 905 1,030 1,390 1,419	26 15 12 30 33 18 12 15 20 30 23 21	803 697 611 579 362 1,138 968 532 698 802 614 202 982 518 617 1,395 588 1,440 150	75	Show	Salt water, 1,070 and 1,215 feet.

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Initial product—barrels.	Remarks.				
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.			Altitude above datum plane—feet.			
32— S. W..	26	M. Murphy	Stoltz Hrs., No. 8.	501	Bridgeport.	840	76	339	1,161					Salt water, 1,090 feet.
					do.	1,060	30	559	941					Gas, 1,303 feet.
					Stray.	1,298	5	797	703					
					"Gas",	1,318	16	817	683		1,334			
	27	M. Murphy	Stoltz Hrs., No. 2.	500	Kirkwood.	1,386	20	885	615		1,406			
					Bridgeport.	800	8	300	1,200					
					do.	845	18	345	1,155		863			
					do.	876	40	376	1,124		916			
	28	M. Murphy	Stoltz Hrs., No. 3.	506	do.	1,002	25	502	998		1,027			
					do.	791	19	285	1,215					
					do.	810	41	304	1,196		810			
					do.	824	15	318	1,182					
29	M. Murphy	Stoltz Hrs., No. 7.	508	do.	852	7	346	1,154						
				do.	864	10	358	1,142		864				
				do.	892	31	386	1,114		892				
				do.	792	268	284	1,216		1,060				
30	M. Murphy	Stoltz Hrs., No. 4.	503	"Gas"	1,297	16	789	711					Gas, 1,313 feet.	
				Kirkwood.	1,380	21	872	698		1,391				
				Bridgeport.	792	20	289	1,211		1,401				
				do.	886	34	383	1,117						
31	M. Murphy	Stoltz Hrs., No. 5.	491	do.	882	34	479	1,021						
				do.	1,027	9	524	976		1,036				
				do.	772	23	281	1,219		785				
				do.	862	34	371	1,129						
32	M. Murphy	Stoltz Hrs., No. 9.	493	do.	982	6	491	1,009						
				do.	1,005	6	514	986		1,011				
				do.	860	40	367	1,133		890				
				do.	1,000	19	507	993						
					"Gas"	1,285	1	792	708					Gas, 1,286 feet.
					Kirkwood-1.	1,347	13	854	646		1,347			
					Kirkwood-2.	1,362	9	869	631		1,371			

33	M. Murphy	Stoltz Hrs., No. 6	478	Bridgeport	774	15	296	1, 204	774			
				do.	852	30	374	1, 126	852			
				do.	1, 016	18	538	1, 962	1, 034			
				do.	795	237	315	1, 185	1, 032			
34	M. Murphy	Stoltz Hrs., No. 10	480	"Gas"	1, 256	17	776	724				Gas, 1,273 feet.
				Kirkwood-1	1, 346	23	866	634	1, 354			
				Kirkwood-2	1, 376	6	896	604	1, 382			
				Bridgeport	785	10	305	1, 195	795			
				do.	868	20	388	1, 112				
35	M. Murphy	Stoltz Hrs., No. 1	480	do.	921	14	441	1, 059				
				do.	1, 015	15	535	965	1, 030			Well abandoned.
36	M. Murphy	Stoltz Hrs., No. 11	480	Kirkwood	1, 337	53	837	643	1, 390			
37	Ohio	J. Middaugh, No. 6	481	Bridgeport	777	15	299	1, 201	780			
				do.	1, 048	6	567	933	1, 050			
				do.	777	20	300	1, 200	780			
				do.	900	21	423	1, 077	905			
38	Ohio	J. Middaugh, No. 8	477	do.	1, 335	29	863	637	1, 356			
				Kirkwood-1	1, 370	16	898	602	1, 375			
39	Ohio	J. Middaugh, No. 14	472	Kirkwood-2	775	22	304	1, 196	782			
				Bridgeport	938	15	487	1, 033	943			
40	Ohio	J. Middaugh, No. 9	471	do.	779	23	313	1, 187	789			
				do.	917	33	431	1, 049	917			
41	Ohio	J. Middaugh, No. 4	466	do.	1, 349	33	855	645	1, 360			
42	Ohio	J. Middaugh, No. 13	494	Kirkwood	798	12	237	1, 203				Gas, 806 feet.
43	Ohio	J. Middaugh, No. 2	501	Bridgeport	858	22	337	1, 143	880			
				do.	790	30	289	1, 211	795			
44	Ohio	J. Middaugh, No. 5	501	do.	990	27	489	1, 011				
				do.	792	27	313	1, 187	800			
45	Ohio	J. Middaugh, No. 10	479	do.	954	7	475	1, 025	960			
46	Ohio	J. Middaugh, No. 12	492	do.	853	57	361	1, 139	853			
47	Ohio	J. Middaugh, No. 3	487	do.	788	27	301	1, 199	800			
				do.	983	29	496	1, 004	983			
48	Ohio	J. Middaugh, No. 11	487	do.	917	23	430	1, 070				
				Kirkwood-1	1, 398	2	896	604	1, 398			
50	Ohio	J. Middaugh, No. 15	502	Kirkwood-2	1, 416	6	914	586	1, 420			
				Bridgeport	852	58	350	1, 150	874			Slate, 870 to 874 feet.
51	Ohio	J. Middaugh, No. 1	502	do.	795	18	291	1, 209	800			
				do.	1, 005	30	501	999	1, 010			
				J. Middaugh, No. 7	780	18	299	1, 201	785			
				do.	900	25	509	991	1, 010			
1	Ohio	Johnson, No. 4	481	do.	820	10	350	1, 150	820			
				do.	856	18	386	1, 114	856			
2	Ohio	Johnson, No. 7	470	do.	965	22	495	1, 005	965			Gas, 895 feet.
				do.	825	42	360	1, 140	832			
				do.	955	15	490	1, 010	955			
3	Ohio	Johnson, No. 6	465	do.	1, 360	5	895	605				Gas, 920 feet.
				Kirkwood	857	18	394	1, 106	857			
4	Ohio	Johnson, No. 8	463	Bridgeport	940	38	477	1, 023				
				do.	861	21	396	1, 104	861			Gas, 920 feet.
5	Ohio	Johnson, No. 9	465	do.	850	38	386	1, 114	870			
6	Ohio	Johnson, No. 10	464	do.	777	21	305	1, 195	777			Gas, 850 feet.
7	Ohio	Johnson, No. 11	472	do.	870	20	398	1, 102	870			

S. E. . . .

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
32— S. E....	8	Ohio.....	Johnson, No. 5.....	470.....	Bridgeport.....	780.....	15.....	310.....	1,190.....	785.....	.....	.....
	9	Ohio.....	Johnson, No. 1.....	472.....	do.....	939.....	27.....	469.....	1,031.....	940.....	100.....	.....
	10	Ohio.....	Johnson, No. 2.....	461.....	do.....	782.....	18.....	310.....	1,190.....	785.....	50.....	.....
	11	Ohio.....	Johnson, No. 3.....	462.....	do.....	890.....	10.....	418.....	1,082.....	895.....	75.....	.....
	12	Ohio.....	Griggs, No. 14.....	458.....	do.....	865.....	21.....	404.....	1,096.....	930.....	90.....	.....
	13	Ohio.....	Griggs, No. 20.....	457.....	do.....	925.....	25.....	464.....	1,036.....	930.....	.....	.....
	14	Ohio.....	Griggs, No. 11.....	461.....	do.....	775.....	21.....	313.....	1,187.....	780.....	.....	.....
	15	Ohio.....	Griggs, No. 21.....	458.....	do.....	927.....	18.....	465.....	1,035.....	.....	.....	.....
	16	Ohio.....	Griggs, No. 27.....	473.....	do.....	1,417.....	3.....	959.....	541.....	.....	.....	.....
	17	Ohio.....	Griggs, No. 22.....	463.....	do.....	1,457.....	7.....	999.....	501.....	1,450.....	50.....	.....
	18	Ohio.....	Griggs, No. 17.....	468.....	do.....	1,431.....	8.....	974.....	526.....	1,431.....	40.....	.....
	19	Ohio.....	Griggs, No. 23.....	467.....	do.....	1,461.....	.....	1,007.....	483.....	1,461.....	100.....	.....
	20	Ohio.....	Griggs, No. 10.....	465.....	do.....	1,445.....	.....	894.....	516.....	1,448.....	50.....	.....
	21	Ohio.....	Griggs, No. 24.....	474.....	do.....	.....	.....	409.....	1,091.....	867.....	.....	.....
	36— N. E....	1	Bridgeport.....	Stoltz, No. 2.....	498.....	do.....	910.....	23.....	452.....	1,048.....	.....	.....	Gas, 1,358 feet.
					do.....	1,358.....	24.....	885.....	615.....	1,358.....	100.....	Gas, 916 feet.
					do.....	1,432.....	26.....	959.....	541.....	1,437.....	65.....	Gas, 872 feet.

2	Bridgeport.	Stoltz, No. 12.	508	Bridgeport.	700	30	192	1,308	.....	.....	.....	Salt water, 715 feet.
				do.	745	35	237	1,293	.....	.....	.....	Salt water, 780 feet.
				do.	825	55	317	1,183	.....	.....	.....	.....
				Buchanan.	1,040	39	532	968	.....	.....	.....	.....
				"Gas".	1,318	39	810	690	.....	.....	.....	.....
3	Bridgeport.	Stoltz, No. 4.	510	Kirkwood.	1,485	10	977	523	.....	.....	.....	.....
				do.	1,554	39	1,046	454	1,572	1,609	.....	Salt water.
				Bridgeport.	868	12	358	1,142	.....	.....	.....	.....
				do.	900	12	390	1,110	.....	.....	.....	Salt water, 1,204 and 1,278 feet.
				do.	1,114	211	604	896	.....	.....	.....	.....
4	Bridgeport.	Stoltz, No. 6.	504	Buchanan.	1,348	40	838	662	.....	.....	.....	.....
				Stray.	1,462	6	952	548	.....	.....	.....	.....
				Kirkwood.	1,652	20	1,142	358	1,660	240	.....	.....
				Bridgeport.	880	40	326	1,174	.....	.....	.....	.....
				do.	1,040	112	536	964	.....	.....	.....	Salt water.
5	Bridgeport.	Stoltz, No. 5.	481	Bridgeport and	.....	.....	.....	.....	.....	.....	.....	.....
				Buchanan.	1,175	75	671	829	.....	.....	.....	do.
				Buchanan.	1,250	168	746	754	.....	.....	.....	do.
				"Gas".	1,480	10	976	524	.....	.....	.....	Show
				Kirkwood.	1,557	24	1,053	447	1,567	100	.....	Salt water, 1,340 feet.
6	Bridgeport.	Stoltz, No. 1.	488	do.	1,580	48	1,039	401	1,557	1,628	.....	.....
				"Gas".	1,485	10	997	508	.....	.....	.....	Show
				Kirkwood.	1,565	22	1,077	423	1,565	300	.....	.....
				do.	1,590	35	1,105	395	1,603	1,618	.....	.....
				Bridgeport.	820	35	331	1,169	.....	.....	.....	Salt water.
8	Bridgeport.	Stoltz, No. 3.	489	do.	1,050	165	561	939	.....	.....	.....	Salt water, 1,195 feet.
				Buchanan.	1,300	40	811	689	.....	.....	.....	.....
				"Gas".	1,475	20	986	514	.....	.....	.....	Salt water.
				Kirkwood.	1,570	36	1,081	419	1,570	80	.....	.....
				"Gas".	1,562	60	1,046	454	.....	.....	.....	.....
9	Bridgeport.	Stoltz, No. 11.	516	Kirkwood.	1,616	60	1,100	400	1,625	1,691	.....	No record.
				.....	.....	.....	.....	.....	.....	.....	.....	do.
				.....	.....	.....	.....	.....	.....	.....	.....	do.
			
			
10	Burton Bros.	Stoltz, No. 10.	521	Bridgeport.	810	18	289	1,211	.....	.....	.....	.....
				do.	880	50	359	1,141	.....	.....	.....	.....
				do.	1,160	125	639	861	.....	.....	.....	Salt water.
				"Gas".	1,590	15	1,069	431	.....	.....	.....	.....
				Kirkwood.	1,672	37	1,151	349	1,677	1,709	.....	.....
2	Snowden Bros.	Fyffe, No. 9.	506	Bridgeport.	800	50	334	1,116	.....	.....	.....	Salt water, 905 feet.
				do.	1,125	135	619	881	.....	.....	.....	Salt water, 1,160 feet.
				do.	1,285	40	779	721	.....	.....	.....	Salt water, 1,325 feet.
				Buchanan.	1,390	60	884	616	.....	.....	.....	Salt water, 1,435 feet.
				Stray.	1,532	7	1,026	474	.....	.....	.....	.....
12	Burton Bros.	Stoltz, No. 9.	524	"Gas".	1,573	16	1,067	433	.....	.....	.....	Salt water, 1,589 feet.
				Kirkwood.	1,642	57	1,136	364	1,651	1,717	150	.....
			
			
			

S. E.

Lawrence County—Bridgeport Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
36— S. E....		3 Snowden Bros. International Oil & Gas Co.	Fyffe, No. 8.	499	Bridgeport.....	855	37	356	1,144	.....	.....	.....	Hole full of water, 885 feet.
					do.....	1,085	100	586	914	.....	.....	.....	Hole full of water, 1,110 feet.
					Buchanan.....	1,275	25	776	724	.....	.....	.....	.....
					"Gas".....	1,345	65	846	654	.....	.....	.....	.....
					Kirkwood.....	1,535	21	1,036	464	.....	.....	.....	Salt water, 1,544 feet.
4 5		Snowden Bros. International Oil & Gas Co.	Fyffe, No. 3.	506	Kirkwood.....	1,621	46	1,122	378	1,625	1,670	125	.....
					do.....	1,563	18	1,087	413	.....	.....	100	.....
					do.....	1,594	24	1,082	418	.....	.....	125	.....
					Bridgeport.....	1,125	75	609	891	.....	.....	.....	.....
					do.....	1,222	35	706	794	.....	.....	.....	.....
6		International Oil & Gas Co.	C. Fyffe, No. 4.	516	do.....	1,300	25	784	716	.....	.....	.....	.....
					Buchanan.....	1,410	25	894	606	.....	.....	.....	.....
					Stray.....	1,465	15	949	551	.....	.....	.....	.....
					Kirkwood-1.....	1,645	22	1,129	371	.....	.....	.....	.....
					Kirkwood-2.....	1,673	5	1,157	343	.....	1,685	.....	Hole full of salt water, 1,135 feet.
7		International Oil & Gas Co.	C. Fyffe, No. 5.	526	Bridgeport.....	1,120	90	594	906	.....	.....	.....	.....
					Kirkwood-1.....	1,666	18	1,140	360	1,666	.....	Show	.....
					Kirkwood-2.....	1,689	21	1,163	337	1,689	1,720	.....	.....
					Bridgeport.....	770	25	247	1,253	.....	.....	.....	Salt water.
					do.....	850	85	327	1,173	.....	.....	.....	Salt water, 935 feet.
8		Bridgeport.	Stoltz, No. 13.	523	do.....	967	8	444	1,056	.....	.....	.....	.....
					do.....	1,020	15	497	1,003	.....	.....	.....	Salt water.
					do.....	1,146	99	623	877	.....	.....	.....	do.
					do.....	1,260	60	737	763	.....	.....	.....	.....
					Buchanan.....	1,390	10	867	633	.....	.....	.....	Salt water.
					Stray.....	1,445	25	922	578	.....	.....	.....	.....
					"Gas".....	1,595	10	1,073	428	.....	.....	.....	Salt water.
					Kirkwood.....	1,679	31	1,156	344	1,689	1,733	.....	.....

9	International Oil & Gas Co.	C. Fyffe, No. 6.	531	Bridgeport. do. Buchanan. "Gas" Kirkwood.	875 1,100 1,420 1,550 1,623	70 141 28 25 12	344 579 921 611 481 1,092 408	1,156 1,635	Salt water, 894 feet. Salt water, 1,170 feet. Salt water, 1,430 feet.
10	International Oil & Gas Co.	C. Fyffe, No. 1.	538	do.	1,600	.....	1,062	438	Salt water.
11	International Oil & Gas Co.	C. Fyffe, No. 3.	529	do.	1,677	.....	1,148	352	Salt water, 1,270 feet.
12	Bridgeport.	Stoltz, No. 9.	526	Bridgeport. Kirkwood.	1,160 1,698	150 25	634 1,172	866 328	....................

Lawrence County—Christy Township.

Section No.	Map No.	Name of oil company	Name of well.	Sur-face ele-va-tion—feet.	Sand					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
10—N. E..	1	Home Oil & Gas Co.	Mathias, No. 1.	470	Shallow.	825 1,000	20	355 530	1,145 970	.....	.....	.....	Salt water, 852 feet. Coal, 760 feet (lime cap).
12—N. W..	1	Home Oil & Gas Co.	Saunders, No. 1.	.....	Shallow Stray	830 1,110	40	.....	.....	.....	.....	Show	Coal, 770 feet (lime cap).
13—N. W..	1	Ohio.	Neidaugh, No. 1.	495	Bridgeport.	1,330	130	835	665	.....	1,526	Dry	Salt water, 1,400 feet.
36—					do.	900	25	391	1,109	.....	.....	.....	.....
					do.	1,075	10	566	934	.....	.....	.....	Salt water, 1,120 feet.
					Buchanan.	1,255	235	726	774	.....	.....	.....	.....
					Stray	1,470	20	961	539	.....	.....	.....	.....
					Kirkwood.	1,680	50	1,171	329	.....	1,730	.....	.....
									

Lawrence County—Dennison Township.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1—N. E...	1 Wark.	Lingenfelter, No. 9	Lingenfelter, No. 1.	439	Kirkwood-1	1,571	10	1,134	386	.....	.....	Drilling
	2 Wark.				Kirkwood-2	1,612	10	1,175	325	.....	.....	Quit in hard sand
	3 Wark.				Kirkwood-1	1,545	20	1,107	393	.....	1,622	
	1 Wark.				Kirkwood-2	1,591	10	1,153	347	.....	1,601	
N. W..	1 Wark.	Lingenfelter, No. 3	Lingenfelter, No. 3	445	Kirkwood-1	1,542	53	1,097	403	.....	.....	Salt water, 1,585 feet.
	2 Wark.				Bridgeport.	984	18	489	1,011	.....	.....	Sand, white, broken.
	3 Wark.				Kirkwood-1	1,533	32	1,088	411	.....	.....
	3 Wark.				Kirkwood-2	1,572	8	1,127	373	.....	1,580	
	4 Wark.	Lingenfelter, No. 6	Lingenfelter, No. 6	462	Bridgeport.	937	13	484	1,016	.....	950	
	5 Wark.				Kirkwood-1	1,549	73	1,087	413	.....	{ 1,558 1,605	Hard white sand, 1,578 to 1,605 feet, 1,611 to 1,622 feet.
	6 Wark.				Stray	1,654	23	1,192	308	.....	.....
	7 Central Refining Co.				Tracey	1,693	10	1,231	269	.....	1,705	
	8 Central Refining Co.	Jenner, No. 6	Jenner, No. 6	476	Kirkwood	1,555	20	1,094	406	.....	Show	
	9 Central Refining Co.				Tracey	1,670	28	1,209	291	.....	1,699	
	10 Donnel, Agent				Kirkwood	1,536	20	1,081	419	.....	1,612	
	11 Donnel, Agent				Bridgeport.	978	47	506	394	.....	.....	Salt water, 1,045 feet.
	12 Donnel, Agent	Jenner, No. 9	Jenner, No. 9	472	Kirkwood	1,565	16	1,198	302	.....	1,720	
	13 Donnel, Agent				Tracey	1,670	16	1,198	302	.....	.....
	14 Donnel, Agent				Bridgeport.	965	41	489	1,011	.....	.....	Salt water, 1,005 feet.
	15 Donnel, Agent				Kirkwood	1,587	41	1,111	389	.....	1,673	
	16 Donnel, Agent	Jenner, No. 4	Jenner, No. 4	482	Bridgeport.	945	23	463	1,037	.....	1,986	
	17 Donnel, Agent				Kirkwood-2	1,610	25	1,133	367	.....	.....
	18 Donnel, Agent				Tracey	1,697	3	1,220	280	.....	.....	Salt water, 1,850 feet.
	19 Donnel, Agent				McClosky	1,850	.....	1,373	127	.....	1,869	Well abandoned.
	20 Donnel, Agent	C. Buchanan, No. 5	C. Buchanan, No. 5	477	Kirkwood-1	1,540	.....	1,065	435	.....	2,005	Salt water, 1,440 and 1,850 feet. Well abandoned.
	21 Donnel, Agent				Kirkwood-1	1,540	.....	1,065	435	.....	.....
	22 Donnel, Agent				Kirkwood-1	1,540	.....	1,065	435	.....	.....
	23 Donnel, Agent				Kirkwood-1	1,540	.....	1,065	435	.....	.....

S. W.	12	Dounell, Agent	C. Buchanan, No. 9.	440	{	Bridgeport.	933	493	1,007	940	.....	Show Gas, 940 feet. Salt water.		
						Kirkwood-1.	1,570	1,130	370	.....	.....	1,000 feet.		
						Tracey	1,680	1,240	260	.....	.....	Salt water, 1,600 feet.		
	1	Ohio.	A. Buchanan, No. 1.	479	{	Bridgeport.	960	13	481	963	.....	Well abandoned.		
						do.	940	17	473	.....	.....	160 Gas, 962 feet.		
	2	Ohio.	A. Buchanan, No. 12.	467	{	Buchanan	1,300	195	833	667	.....	Salt water, 1,115 feet.		
						Kirkwood-2.	1,602	46	1,135	365	.....	Salt water, 1,310 feet.		
						Tracey	1,709	10	1,242	.....	.....	Salt water, 1,648 feet.		
							.....	.....	.....	1,719	.....	Gas, 1,709 feet. 4,500,000 eu. ft. gas first day.		
	3	Ohio.	A. Buchanan, No. 13.	468	{	Bridgeport.	795	7	327	1,173	795	803	250	Gas, 795 feet.
N. E.						do.	945	10	472	1,028	.....	.....	.....	.....
	4	Ohio.	E. J. Ridgely, No. 2.	473	{	Buchanan	1,335	30	862	638	.....	.....	.....	.....
						Kirkwood	1,560	40	1,087	413	.....	.....	.....	.....
						Tracey	1,700	20	1,227	273	.....	.....	.....	.....
						McClosky	1,775	7	1,302	198	.....	.....	.....	.....
	5	Ohio.	C. Gillespie, No. 1.	473	{	Bridgeport.	975	140	502	998	.....	.....	.....	Dry Salt water, 1,782 feet.
						Buchanan	1,310	15	837	663	.....	.....	.....	.....
						Kirkwood-2.	1,625	16	1,152	348	.....	.....	.....	.....
							.....	.....	.....	.....	1,631	1,641	12	Salt water, 1,640 feet. Gas 1,625 feet.
						Bridgeport.	973	47	501	999	.....	.....	.....	.....
6	Ohio.	Wm. Gillespie, No. 2.	472	{	Stray	1,120	30	648	852	.....	.....	.....	Salt water.	
					Buchanan	1,320	80	848	652	.....	.....	.....	do.	
					Kirkwood-1.	1,565	25	1,093	407	.....	.....	.....	.....
					Kirkwood-2.	1,619	3	1,147	353	.....	.....	.....	Gas 3,000,000 eu. ft. gas first day.	
1	Shaffer and Smathers.	Finley, No. 7.	475	{	Kirkwood.	1,570	35	1,095	405	1,532	.....	.....	.....
2	Shaffer and Smathers.	Finley, No. 3.	487	{	Tracey	1,653	22	1,178	322	1,655	1,681	50	No record.	
3	Shaffer and Smathers.	Finley, No. 6.	487	{		.....	.....	.....	.....	.....	.....	.....	Dry	
4	Shaffer and Smathers.	Finley, No. 2.	503	{		.....	.....	.....	.....	.....	.....	.....	do.	
5	Shaffer and Smathers.	Finley, No. 4.	504	{		.....	.....	.....	.....	.....	.....	.....	do.	
6	Shaffer and Smathers.	Finley, No. 5.	507	{		.....	.....	.....	.....	.....	.....	.....	do.	
7	Shaffer and Smathers.	Finley, No. 1.	496	{	Shallow	600	30	116	1,384	.....	.....	.....	do.	
Associated Producers.						do.	843	19	359	1,141	.....	.....	.....	Salt water.
						Bridgeport.	868	20	384	1,116	.....	.....	.....	.....
						do.	952	13	468	1,032	960	.....	.....	Salt water, 1,005 feet.
	8	Associated Producers.	Irish, No. 1.	484	{	do.	983	162	499	1,001	995	.....	.....	.....
						Buchanan-1.	1,315	10	831	689	.....	.....	.....	.....
						Buchanan-2.	1,350	20	866	634	.....	.....	.....	.....
						Stray	1,417	38	933	567	.....	.....	.....	Salt water.
						do.	1,528	12	1,044	456	.....	.....	.....	.....
						Kirkwood.	1,580	38	1,096	404	.....	.....	.....	.....
						Bridgeport-1.	949	3	475	1,025	.....	.....	.....	70
9	Associated Producers.	Irish, No. 10.	474	{	Bridgeport-2.	953	17	479	1,021	.....	.....	Show	.....
10	Associated Producers.	Irish, No. 2.	477	{	Bridgeport.	955	23	478	1,022	.....	.....	976	40	
11	Associated Producers.	Irish, No. 3.	499	{	Shallow	700	15	201	1,299	.....	.....	978	200	
12	Associated Producers.	Irish, No. 9.	503	{	Bridgeport.	977	72	478	1,022	.....	.....	.....	.....
					do.	1,000	27	497	1,003	1,000	1,100	Show	Well abandoned.	

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
N. E....	13	Ohio.....	L. Buchanan, No. 22.....	517	{	Bridgeport.....	992	32	475	1,025							Salt water, 1,025 to 1,155 feet.....
							1,290	190	773	727				1,583		15	Salt water, 1,315 feet.....
N. E....	14	Ohio.....	L. Buchanan, No. 23.....	508	{	Bridgeport.....	1,578	37	1,061	439							Salt water, 1,590 feet.....
							968	152	460	1,040							Salt water, 1,020 feet.....
							1,300	165	792	708							Salt water, 1,320 feet.....
							1,595	25	1,087	413						50	Salt water, 1,598 feet.....
							935	60	936	936						125	Gas, 935 feet.....
							976	49	464	1,072						50	Gas, 980 feet.....
							979	41	462	1,038						100	Gas, 982 feet.....
							980	20	490	1,010							
							1,592	38	1,021	398						125	Gas, 1,605 feet.....
							966	40	454	1,046						150	Gas, 968 feet.....
							945	71	433	1,067							
							1,588	65	1,076	424							
							967	20	464	1,036							
							1,590	51	1,087	413							
N. E....	22	Ohio.....	L. Buchanan, No. 8.....	518	{	Bridgeport.....	970	30	452	1,048							Salt water, 1,592 feet.....
							1,600	41	1,082	418						30	Gas, 1,615 feet. Salt wa-ter, 1,641 feet.....
							970	50	448	1,052						125	Gas, 972 feet.....
							960	27	451	1,049						90	Gas, 956 feet.....
							961	23	468	1,032						100	Gas, 956 feet.....
							933	57	436	1,064							
							1,020	80	523	977							
							1,300	182	503	697							
							1,564	23	1,067	433						125	Salt water, 1,315 feet.....
							970	48	452	1,048							
							1,310	15	792	708							
							1,588	30	1,070	430						75	Gas, 1,607 feet.....
N. E....	28	Ohio.....	L. Buchanan, No. 3.....	518	{	Bridgeport.....	970	45	452	1,048						175	Gas, 970 feet.....
							979	60	466	1,034						50	Gas, 994 feet.....

30	Ohio.	L. Buchanan, No. 5.	513 { do. Kirkwood	970 1,592	70 54	457 1,079	1,043 421	1,609 1,646	Gas, 1,595 feet. Salt water, 1,046 feet. Well abandon- ed.
1	Ohio.	Kerr, No. 19.	510 { Bridgeport. Buchanan	975 1,307	30 110	465 790	1,035 710		
2	Ohio.	Kerr, No. 1.	509 { Kirkwood	955 1,367	38 38	537 443	1,582 710	1,605	150 Gas, 1,590 feet.
3	Ohio.	Kerr, No. 4.	515 { Bridgeport.	960 955	49 47	445 446	1,054 973	1,002	Gas, 960 feet.
4	Ohio.	Kerr, No. 10.	517 { do.	643 960	8 49	126 445	1,374 1,055	975	Gas, 965 feet.
5	Ohio.	Kerr, No. 7.	517 { Shallow.	970 643	30 8	453 126	1,047 1,374	1,005	
6	Ohio.	Kerr, No. 9.	515 { Bridgeport.	1,597 970	39 30	1,080 453	1,807 1,047		
7	Ohio.	Kerr, No. 13.	515 { Kirkwood	753 1,597	14 39	238 1,080	1,262 420	1,607	
8	Ohio.	Kerr, No. 15.	515 { Shallow.	966 753	49 14	445 238	1,055 1,262	1,009	
9	Ohio.	Kerr, No. 17.	512 { do.	972 966	49 44	460 445	1,040 1,055	1,011	
10	Ohio.	Kerr, No. 18.	512 { do.	649 966	25 44	454 451	1,046 1,040	1,000	
11	Ohio.	Kerr, No. 16.	504 { Shallow.	972 649	33 25	468 454	1,032 1,363	980	
12	Ohio.	Kerr, No. 12.	500 { Bridgeport.	968 972	33 25	468 468	1,032 1,032	1,001	
13	Ohio.	Kerr, No. 24.	499 { do.	968 968	33 33	468 468	1,032 1,032		
14	Ohio.	Kerr, No. 11.	494 { Bridgeport.	941 941	50 50	447 447	1,033 1,033		Drilling
15	Ohio.	Kerr, No. 8.	494 { Shallow.	585 941	60 50	91 447	1,409 1,033	645	
16	Ohio.	Kerr, No. 6.	505 { Bridgeport.	910 941	87 50	405 447	1,095 1,033	964	
17	Ohio.	Kerr, No. 23.	509 { do.	972 968	33 33	468 468	1,032 1,032		
18	Ohio.	Kerr, No. 5.	509 { do.	968 968	33 33	468 468	1,032 1,032		
19	Ohio.	Kerr, No. 21.	515 { Bridgeport.	965 1,260	42 745	456 755	1,044 755	974	
20	Ohio.	Kerr, No. 3.	515 { Buchanan	1,586 1,308	793 793	707 707	1,586 707		
21	Ohio.	Kerr, No. 22.	515 { Kirkwood	970 1,586	45 790	455 749	1,045 751	1,015	
22	Ohio.	Kerr, No. 2.	516 { Stray	920 1,264	21 2	785 731	1,715 731	1,321	
23	Ohio.	Kerr, No. 20.	516 { Buchanan	1,580 1,300	10 21	404 785	1,006 715	1,010	Well abandoned
24	Ohio.	T. Gould, No. 20.	514 { Bridgeport.	985 1,586	245 22	471 472	1,029 428	1,613	Gas, 920 feet.
25	Ohio.	T. Gould, No. 7.	516 { Kirkwood	1,305 1,586	145 22	791 472	709 428	1,587	Salt water, 1,035 feet
26	Ohio.	T. Gould, No. 8.	510 { Bridgeport.	988 1,586	42 22	468 472	1,032 428	1,608	Salt water, 1,320 feet.
27	Ohio.	T. Gould, No. 1.	519 { do.	978 988	32 42	468 468	1,032 986	1,031	100 Gas, 1,586 feet.
28	Ohio.	S. Gray, No. 2.	491 { do.	980 980	44 32	461 461	1,039 986	1,010	100 Gas, 990 feet.
29	Ohio.	S. Gray, No. 5.	493 { do.	957 952	29 29	466 459	1,034 1,041	957	40 Gas, 980 feet.
30	Ohio.	S. Gray, No. 3.	514 { do.	965 953	28 32	451 461	1,049 1,039	984	60 Gas, 957 feet.
31	Ohio.	S. Gray, No. 4.	492 { do.	965 953	28 32	451 461	1,049 1,039	985	
32	Donnel, Agent.	C. H. Buchanan, No. 3.	493 { Shallow	949 610	30 117	456 1,383	1,044 1,383	965	
33	Donnel, Agent.	C. H. Buchanan, No. 4.	487 { Bridgeport.	962 962	18 38	473 1,139	1,025 1,139	968	
34	Donnel, Agent.	C. H. Buchanan, No. 2.	491 { do.	852 880	17 17	361 389	1,111 1,111		
35	Donnel, Agent.	C. H. Buchanan, No. 1.	491 { do.	973 770	5 279	482 1,011	1,018 1,221	978	50 Salt water, 997 feet.
36	Donnel, Agent.	C. E. Buchanan, No. 1.	473 { Shallow.	975 975	200 721	980 502	1,002 998	754	
37	Donnel, Agent.	C. E. Buchanan, No. 2.	483 { Bridgeport.	990 990	15 15	507 507	993 993	1,005	200 Gas, 997 feet.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Name.	Sand.				Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Thick-	ness						
2— N. W.	38	Donnel, Agent.	E. Vandemark, No. 2	470	Shallow	655	25			152	1,348				Well abandoned No record.
	39	Donnel, Agent.	E. Vandemark, No. 1.	475	Bridgeport.	969	30			486	1,014	992		15	
					Buchanan.	1,350	212			867	633			200	
S. W.	40	Lantz.	A. Gray, No. 4.	483	Kirkwood.	1,605				1,122	378				Exhausted.
					Stray	1,643				1,160	340	1,613			
					McClosky	1,902				1,419	81		2,280		Red rock, 1,600 and 1,640 feet.
					Bridgeport.	956	40			490	1,010				
	1	Ohio.	Clark, Acct. 2, No. 1.	466	Kirkwood.	1,604	38			1,138	362				Salt water, 1,667 feet.
	2	Ohio.	Kerr, No. 14.	474	Bridgeport.	945				471	1,029	950	2,028		
	3	Mae.	Gillespie, No. 1.	465	Shallow.	445	10			—20	1,520				Salt water, 2,012 feet.
	4	Mae.	Gillespie, No. 3.	468	Bridgeport.	950	53			451	1,019	950	1,003		
	5	Mae.	Gillespie, No. 2.	469	Shallow.	485	7			17	1,483				Sand above sea level.
					do.	444	12			—25	1,525			5	
S. E.	6	Ohio.	Clark, Acct. 2, No. 4.	465	do.	485	7			16	1,484	493		12	Salt water, 1,003 feet.
	7	Ohio.	Clark, Acct. 2, No. 2.	462	do.	482	16			17	1,483			Light	
	1	Ohio.	Clark, Acct. 2, No. 2.	462	Bridgeport.	938	42			493	1,007	997	1,002		Gas, 997 feet.
	1	Ohio.	L. Buchanan, No. 14.	468	do.	942	103			480	1,020			5	
	2	Ohio.	L. Buchanan, No. 15.	477	do.	929	48			458	1,042	931	975		Dry Salt water, 1,040 feet.
	3	Ohio.	L. Buchanan, No. 24.	489	do.	938	32			449	1,051	935	977		
	4	Ohio.	A. Buchanan, No. 8.	503	do.	1,063				530	970			250	Gas, 930 feet.
	5	Ohio.	A. Buchanan, No. 6.	505	do.	390	22			—115	1,613	1,040		50	
					Bridgeport.	945	45			440	1,060	967	990		Gas, 952 feet.
	6	Ohio.	A. Buchanan, No. 7.	491	Shallow.	685	15			194	1,306			175	
					Stray	790	10			299	1,201				Gas, 966 feet.
					Bridgeport.	948	22			457	1,043	955	970		

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Name.	Altitude				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.									
3—	S. E...	Wheeler & James.	Leighty, No. 2.	462	Shallow	500	20	46	1,454	500	No record.						
			Clark, No. 3.	454	Stray	750	50	296	1,204	1,031	15						
5—	N. W..		L. Jenner, No. 2.	410	Kirkwood.	1,557	44	1,147	353	1,602	Dry						
			L. Jenner, No. 1.	409	do.	1,540	39	1,131	369	1,548	65						Gas, 1,548 feet.
			A. Jordan, No. 1.	411	do.	1,548	19	1,127	363	1,554							
			L. Jenner, No. 3.	408	Kirkwood-2.	1,504		1,196	304	1,637	Dry						Salt water, 1,633 feet.
S. W..	1	Ohio.	E. Meagher, No. 1.	419	Kirkwood.	1,578	32	1,139	341	1,584	25						Gas, 1,580 feet. Salt water, 1,612 feet.
			Murphy, No. 1.	412	do.	1,541		1,129	371	1,640	Dry						Salt water, 1,637 feet.
6—	S. E...		Ackman, No. 3.	412	do.	1,537	43	1,125	375	1,612	20						Salt water, 1,598 feet.
			Ackman, No. 2.	409	do.	1,538	41	1,129	371	1,642	80						Gas, 1,542 feet.
			Shuey, No. 3.	410	do.	1,548		1,138	362	1,549	30						
			Shuey, No. 4.	418	do.	1,582	51	1,104	336	1,612	Dry						Salt water, 1,631 feet.
N. W..	2	Ohio.	Shuey, No. 1.	410	do.	1,550	29	1,140	360	1,550	150						Gas, 1,612 feet.
			Ackman, No. 1.	412	do.	1,552		1,140	360	1,552	75						Gas, 1,552 feet.
			Ackman, No. 5.	413	do.	1,532	38	1,119	381	1,548	130						Gas, 1,547 feet.
			Ackman, No. 4.	415	do.	1,537	43	1,122	378	1,572	20						Gas, 1,572 feet. Salt water, 1,598 feet.
			Jordan, No. 2.	425	do.	1,548	50	1,123	377	1,564							Gas, 1,567 feet.
			Jordan, No. 3.	423	do.	1,557	68	1,134	366	1,565							
			E. Leighty, No. 2.	423	do.	1,554	64	1,131	369	1,600							Salt water, 1,570 feet.
			E. Leighty, No. 1.	424	McClosky	1,742	6	1,319	181	1,783	Dry						
S. E...	5	Ohio.	E. Leighty, No. 1.	424	Kirkwood.	1,565	20	1,141	359	1,816	Dry						
					Bridgeport.	1,900	24	1,476	1,021								
					Buchanan.	1,285	103	861	639								
			E. Leighty, No. 4.	424	Kirkwood-1.	1,551	23	1,127	373								
S. E...	6	Ohio.	Kirkwood-2.	1,602	Kirkwood.	1,551	18	1,178	322	1,604	100						Gas, 1,602 feet.
			Shuey, No. 2.	422	Kirkwood.	1,560	25	1,138	362	1,597							Dry Salt water, 1,562 feet.

S. E...	1 Ohio...	G. Barnett, No. 1.	414	do.	1,557	36	1,143	357	1,582	1,563	60 Gas, 1,575 feet.
7— N. W.	1 Ohio...	N. Buchanan, No. 1.	416	do.	1,565	65	1,149	351	1,670	1,670	Dry
8— N. W.	1 Ohio...	G. Barnett, No. 2.	442	Kirkwood.	1,600	38	1,158	342	1,626	1,646	5 Gas, 1,620 feet. Salt water, 1,638 feet.
11— N. E.	2 Ohio...	A. Jordan, No. 1.	440	do.	1,605	35	1,165	335	1,641	1,641	Dry Salt water, 1,640 feet. Well abandoned.
1 Shaw.	1 Shaw.	Knight, No. 3.	487	do.	700	222	1,208	1,015	948	956	No record.
2 Shaw.	2 Shaw.	Knight, No. 2.	472	Stray	700	347	1,153	1,014	956	956	do.
3 Shaw.	3 Shaw.	Knight, No. 1.	468	Bridgeport.	920	36	452	1,048	1,206	1,206	Gas, 815 feet.
4 Shaw.	4 Shaw.	Knight, No. 4.	464	do.	947	39	485	1,015	948	956	No record.
5 Shaw.	5 Shaw.	Knight, No. 5.	462	Bridgeport.	957	32	486	1,014	956	956	do.
6 Shaw.	6 Shaw.	Harding, No. 1.	462	do.	1,025	35	554	946	1,206	1,206	Gas, 948 feet.
7 Shaw.	7 Shaw.	Ridgely, No. 1.	471	Stray	1,205	7	734	766	1,206	1,206	Salt water.
1 Shaw.	1 Shaw.	A. Buchanan, No. 2.	464	do.	1,227	17	756	744	937	953	150 Gas, 1,205 feet.
2 Shaw.	2 Shaw.	A. Buchanan, No. 10.	464	Bridgeport.	906	47	442	1,058	937	953	60 Gas, 908 feet.
3 Shaw.	3 Shaw.	A. Buchanan, No. 9.	462	Stray	720	10	256	1,244	927	962	125 Gas, 915 feet.
4 Shaw.	4 Shaw.	A. Buchanan, No. 11.	462	Bridgeport.	914	48	450	1,050	927	958	150 Gas, 935 feet.
5 Shaw.	5 Shaw.	W. Gillespie, No. 1.	465	do.	938	30	466	1,034	937	958	Dry Salt water, 985 feet.
S. W.	1 Shaw.	I. Buchanan, No. 1.	440	Kirkwood.	1,560	40	1,095	405	1,611	1,611	Dry Salt water, 1,570 feet.
				Bridgeport.	1,011	9	571	929	1,611	1,611	Elevation estimated.
				Buchanan.	1,300	15	860	640	1,774	1,781	100 Gas, 1,774 feet.
				Tracey.	1,692	18	1,382	318	1,774	1,781	Salt water, 1,620 feet.
				McClosky.	1,753	15	1,295	203	1,774	1,781	Salt water, 1,280 feet.
				Bridgeport.	1,000	175	560	940	1,774	1,781	Salt water, 1,630 feet.
				Buchanan.	1,280	120	840	660	1,774	1,781	Salt water, 1,370 feet.
				Kirkwood.	1,600	15	1,600	340	1,774	1,781	Salt water, 1,870 feet.
				Tracey.	1,740	15	1,300	200	1,774	1,781	Elevation estimated.
				McClosky.	1,777	13	1,337	163	1,774	1,781	Show of oil and gas, 1,777 feet.
				Bridgeport.	967	33	494	1,006	2,017	2,017	Salt water.
				do.	1,065	25	602	898	1,246	1,246	Salt water.
				Stray	1,200	44	737	763	1,246	1,246	Gas, 1,206 feet.
				Bridgeport.	940	20	470	1,030	1,246	1,246	Salt water.
				Buchanan.	1,270	110	800	700	1,246	1,246	Salt water, 1,280 feet.
				Kirkwood.	1,615	25	1,145	355	1,246	1,246	Salt water, 1,630 feet.
				Tracey.	1,725	10	1,255	245	1,246	1,246	Salt water, 1,370 feet.
				McClosky.	1,870	20	1,300	200	1,246	1,246	Salt water, 1,870 feet.
				Bridgeport.	1,900	15	1,430	70	1,246	1,246	Elevation estimated.
				do.	1,045	205	586	914	1,246	1,246	Salt water.
				Kirkwood.	1,630	1,171	329	1,632	1,672	1,672	Dry Salt water, 1,665 feet.
12— N. E.	1 Ohio...	Des Beauf, No. 1.	470	do.	1,630	20	470	1,030	1,672	1,672	Dry Salt water, 1,665 feet.
N. W.	1 Donnel, Agent	C. Buchanan, No. 5.	459	do.	1,630	20	470	1,030	1,672	1,672	Dry Salt water, 1,665 feet.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
19— S. W. .	1	Big Four.	S. Seed, No. 5.	512	Kirkwood.	1,639	23	1,127	373	1,614	30	Salt water, 1,852 feet.
					McClosky.	1,640		1,140	160	1,852	Show	Salt water, 963 feet.
	2	Shamless.	S. Seed, No. 2.	508	Bridgeport.	1,963		455	1,045			Salt water, 1,472 feet.
	3	Big Four.	S. Seed, No. 3.	494	Kirkwood.	1,472	51	1,092	408	1,600	100	Slate, 1,630 to 1,635 feet.
	4	Big Four.	S. Seed, No. 2.	487	do.	1,633	15	1,139	361			
	5	Big Four.	S. Seed, No. 1.	475	do.	1,622	18	1,135	365	1,640		
					do.	1,588	31	1,113	357	1,619		
					Bridgeport.	940		450	1,050			
	6	Shamless.	S. Seed, No. 1.	490	Stray.	1,448		958	542			Salt water, 940 feet.
	7	Big Four.	S. Seed, No. 4.	470	Kirkwood.	1,590	34	1,100	400	1,600	110	
					Buchanan.	1,315	55	1,117	333	1,600		Slate, 1,615 to 1,627 feet.
	8	Associated Producers.	Snyder, No. 10.	477	Kirkwood.	1,586	18	1,109	391			
					do.	1,628	12	1,151	349	1,650		
	9	Shamless.	Snyder, No. 1.	488	Bridgeport.	1,460		457	1,043			
	10	Shamless.	S. Seed, No. 3.	504	Kirkwood.	1,595	53	1,077	393	1,648		
					do.	1,595	57	1,091	409	1,652		Salt water.
21— N. E. .					Stray.	760	40	302	1,985			do.
					do.	1,003	57	545	955			do.
	11	Silurian.	S. Seed, No. 1.	458	Bridgeport.	1,345	10	887	613			do.
					Buchanan.	1,600	25	1,142	358	1,606		Salt water, 1,612 feet.
					Kirkwood-2.	1,650	10	1,192	308		Show	Salt water, 1,655 feet.
					McClosky.	1,824	5	1,366	134	1,840	Dry	Salt water.
	1	Ohio.	R. Buchanan, No. 6.	467	Buchanan.	1,308	17	841	659	1,311	200	
	2	Ohio.	R. Buchanan, No. 14.	485	do.	1,316	51	831	669	1,325	190	
	3	Ohio.	R. Buchanan, No. 13.	482	do.	1,305	53	823	677	1,320	360	
	4	Ohio.	R. Buchanan, No. 11.	479	do.	1,313	37	834	666	1,310	400	
	5	Ohio.	R. Buchanan, No. 1.	482	do.	1,332	12	850	650	1,333	200	
	6	Ohio.	Wm. Seed, No. 1.	483	do.	1,331	28	848	652	1,359	300	

7 Ohio...	Wm. Seed, No. 13.	486	do.	1, 318,	43	832,	668	1, 324	1, 361	360
8 Ohio...	Wm. Seed, No. 15.	487	do.	1, 312	43	825	675	1, 317	1, 355	160
9 Ohio...	Wm. Seed, No. 17.	488	do.	1, 310	55	827	673	1, 311	1, 355	160
10 Ohio...	Wm. Seed, No. 5.	489	Kirkwood	1, 314	18	833	349	1, 636	1, 652	100 Gas, 1, 636 feet.
11 Ohio...	Wm. Seed, No. 22.	490	Buchanan	1, 315	31	834	647	1, 358	1, 362	165
12 Ohio...	Wm. Seed, No. 21.	500	do.	1, 317	20	837	683	1, 330	1, 345	200
13 Ohio...	Wm. Seed, No. 2	500	do.	1, 317	20	837	683	1, 330	1, 345	200
14 Ohio...	Wm. Seed, No. 2	492	do.	1, 336	26	836	664	1, 337	1, 362	150
15 Ohio...	Wm. Seed, No. 3	492	do.	1, 340	28	848	652	1, 340	1, 368	125
16 Ohio...	Wm. Seed, No. 4	482	do.	1, 330	28	848	652	1, 335	1, 358	100
17 Ohio...	Wm. Seed, No. 19.	483	do.	1, 330	37	847	653	1, 335	1, 367	100
18 Ohio...	Wm. Seed, No. 20.	480	do.	1, 336	40	856	644	1, 340	1, 376	120
19 Ohio...	Wm. Seed, No. 11.	467	do.	1, 312	58	845	655	1, 312	1, 334	75
20 Ohio...	Wm. Seed, No. 9.	464	Kirkwood	1, 610	24	143	357	1, 615	1, 634	150
21 Ohio...	Wm. Seed, No. 6.	476	Buchanan	1, 293	53	829	671	1, 298	1, 346	75
22 Ohio...	Wm. Seed, No. 23.	475	do.	1, 314	28	838	662	1, 314	1, 342	200
23 Ohio...	Wm. Seed, No. 10.	474	do.	1, 331	23	856	644	1, 331	1, 354	125
24 Ohio...	Wm. Seed, No. 4.	473	do.	1, 326	27	852	648	1, 326	1, 353	100
25 Ohio...	Wm. Seed, No. 19.	492	do.	1, 311	56	838	662	1, 320	1, 367	250
26 Ohio...	Wm. Seed, No. 19.	492	do.	1, 380	100	888	612	1, 380	1, 388	250
27 Ohio...	Wm. Seed, No. 5.	479	McCluskey	1, 893	7	401	99	1, 895	1, 900	25
28 Ohio...	Wm. Seed, No. 18.	483	Buchanan	1, 319	42	840	660	1, 319	1, 365	200
29 Ohio...	Wm. Seed, No. 17.	486	do.	1, 327	53	844	656	1, 327	1, 360	250
30 Ohio...	Wm. Seed, No. 6.	525	do.	1, 335	35	849	651	1, 335	1, 370	200
31 Ohio...	Wm. Seed, No. 13.	525	do.	1, 365	25	850	650	1, 365	1, 390	225
32 Ohio...	Wm. Seed, No. 20.	519	do.	1, 380	20	855	645	1, 380	1, 400	200
33 Ohio...	Wm. Seed, No. 3.	521	do.	1, 370	16	851	649	1, 371	1, 386	200
34 Ohio...	Wm. Seed, No. 2.	507	do.	1, 366	13	845	655	1, 368	1, 379	300
35 Ohio...	Wm. Seed, No. 1.	487	do.	1, 354	13	847	653	1, 357	1, 367	250
36 Ohio...	Wm. Seed, No. 1.	487	do.	1, 375	21	888	612	1, 375	1, 388	250
37 Ohio...	Wm. Seed, No. 1.	521	Kirkwood	1, 522	32	105	395	1, 606	1, 624	7
38 Ohio...	Wm. Seed, No. 3.	523	Buchanan	1, 375	11	854	646	1, 377	1, 386	200
39 Ohio...	Wm. Seed, No. 2.	526	do.	1, 376	36	853	647	1, 376	1, 386	200
40 Ohio...	Wm. Seed, No. 2.	526	Bridgeport	1, 376	150	304	196	1, 376	1, 386	200
41 Ohio...	Wm. Seed, No. 1.	520	Buchanan	1, 367	26	841	659	1, 367	1, 432	Well abandoned
42 Ohio...	Wm. Seed, No. 1.	520	do.	1, 378	27	858	642	1, 393	1, 432	Salt water, 1, 367 feet.
43 Ohio...	Wm. Seed, No. 4.	516	Bridgeport	1, 970	10	454	1, 046	1, 387	1, 405	Well abandoned
44 Ohio...	Wm. Seed, No. 7.	459	Buchanan	1, 373	31	857	643	1, 395	1, 401	50
45 Ohio...	Wm. Seed, No. 8.	455	do.	1, 320	30	861	639	1, 320	1, 401	50
46 Ohio...	Wm. Seed, No. 6.	460	do.	1, 623	30	861	639	1, 320	1, 401	50
47 Ohio...	Wm. Seed, No. 5.	465	Kirkwood	1, 610	17	150	350	1, 634	1, 627	Well abandoned
48 Ohio...	Wm. Seed, No. 4.	476	do.	1, 330	25	865	635	1, 330	1, 627	Well abandoned
49 Ohio...	Wm. Seed, No. 4.	479	Buchanan	1, 327	30	851	649	1, 327	1, 627	Well abandoned
50 Ohio...	Wm. Seed, No. 9.	479	do.	1, 330	14	851	649	1, 330	1, 627	Well abandoned
51 Ohio...	Wm. Seed, No. 3.	468	do.	1, 315	32	847	653	1, 315	1, 627	Well abandoned
52 Ohio...	Wm. Seed, No. 2.	490	do.	1, 335	30	845	655	1, 335	1, 627	Well abandoned
53 Ohio...	Wm. Seed, No. 1.	502	do.	1, 360	18	858	642	1, 360	1, 627	Well abandoned
54 Ohio...	Wm. Seed, No. 1.	476	Kirkwood	1, 582	40	1, 036	414	1, 582	1, 602	50
55 Ohio...	Wm. Seed, No. 2.	500	Bridgeport	1, 585	166	1, 355	415	1, 585	1, 602	140 Well abandoned
56 Ohio...	Wm. Seed, No. 4.	480	Kirkwood	1, 570	26	1, 090	410	1, 570	1, 602	70 Gas, 1, 570 feet.

N. W.

S. W.

S. E.

22—
N. E.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
22— N. E..			A. Gillespie, No. 5.....	437	1,557	27	1,100	400	1,572	1,586	30 Gas, 1,557 feet.	
			L. Gillespie, No. 3.....	462	1,600	24	1,138	362	1,600	1,624	50 Gas, 1,600 feet.	
			L. Gillespie, No. 12.....	469	1,607	15	1,138	362	1,590	1,967	Dry	
			L. Gillespie, No. 8.....	512	1,586	58	1,074	426	1,590	1,644	50	
			L. Gillespie, No. 13.....	484	985	15	501	999	985	1,000	75	
			L. Gillespie, No. 3.....	440	1,291	27	851	649	1,295	1,318	20	
			L. Gillespie, No. 10.....	453	1,590	49	1,137	363	1,595	1,639	10	
			L. Gillespie, No. 7.....	453	1,578	32	1,125	375	1,610	1,625	65	
			L. Gillespie, No. 6.....	447	1,568	32	1,121	379	1,578	1,600	40	
			L. Gillespie, No. 5.....	443	1,592	13	1,149	351	1,599	1,605	100	
			L. Gillespie, No. 2.....	439	1,295	59	856	644	1,331	1,354	5 Salt water, 1,354 feet. Well abandoned.	
S. W..			L. Gillespie, No. 9.....	441	1,573	42	1,132	368	1,580	1,615	7 Salt water, 1,615 feet.	
			L. Gillespie, No. 1.....	440	1,280		840	660	1,300	1,314	150	
			E. Seed, No. 13.....	441							No record	
			E. Seed, No. 10.....	442	1,576	12	1,134	366		1,580		
			E. Seed, No. 7.....	463	1,305	30	842	658				
			E. Seed, No. 17.....	468	1,606	25	1,138	362		1,631	60	
			E. Seed, No. 11.....	468	1,309	31	841	659			Well abandoned.	
			E. Seed, No. 12.....	464	1,298	32	834	666		1,330		
			W. Seed, No. 7.....	458	1,300		842	658	1,305	1,320	175	
			W. Seed, No. 8.....	445	1,290	20	845	655				
			W. Seed, No. 14.....	440	1,570	17	1,125	375	1,570	1,587	75 Gas, 1,570 feet.	
			W. Seed, No. 12.....	453	1,570	20	1,130	370	1,576	1,590	50	
			W. Seed, No. 16.....	461	1,592	10	1,139	361	1,592	1,602	80 Gas, 1,592 feet.	
			W. Seed, No. 18.....	494	1,271	119	810	690				
			Borden, No. 2.....	500	1,015	39	521	979	1,021	1,054	225	
			Borden, No. 1.....	510	1,644	37	863	637	1,587	1,600	90 Gas, 1,587 feet.	
					1,523	81	1,144	356	1,652	1,675	30 Gas, 1,652 feet.	
					1,610	20	1,100	487	1,610	1,630	90 Gas, 1,610 feet.	

6 Ohio.....	Irwin, No. 2.....	514	do.....	1,604	55	1,090	410	1,617	1,659	85 Gas, 1,617 feet.....
7 Ohio.....	Irwin, No. 4.....	480	Buchanan.....	1,282	118	802	698			40 Gas, 1,612 feet.....
8 Ohio.....	Irwin, No. 5.....	404	Buchanan.....	1,612	53	1,132	368	1,612	1,665	30 Gas, 1,618 feet.....
9 Ohio.....	Irwin, No. 3.....	459	Kirkwood.....	1,300	115	836	664			100 Gas, 1,630 feet.....
10 Ohio.....	Irwin, No. 1.....	519	Bridgeport.....	1,618	33	1,154	346	1,618	1,651	50 Gas, 1,628 feet.....
1 Ohio.....	T. Gillespie, No. 5.....	501	Kirkwood.....	985	55	526	974			Dry.....
2 Ohio.....	T. Gillespie, No. 19.....	469	do.....	1,576	69	1,117	383	1,630	1,821	25 Gas, 1,547 feet.....
3 Ohio.....	T. Gillespie, No. 16.....	466	do.....	1,528	27	1,009	491	1,528	1,658	50 Gas, 1,538 feet.....
4 Ohio.....	T. Gillespie, No. 13.....	460	do.....	1,530	10	1,029	471			50 Gas, 1,546 feet.....
5 Ohio.....	T. Gillespie, No. 11.....	465	do.....	1,538	14	1,069	431	1,538	1,559	50 Gas, 1,537 feet.....
1 Ohio.....	Ryan, No. 8.....	431	Bridgeport and Buchanan.....	1,527	29	1,061	439	1,546	1,556	100
2 Ohio.....	Ryan, No. 9.....	432	Kirkwood.....	1,100	104	640	860			20 Salt water, 1,582 feet.....
3 Ohio.....	Ryan, No. 12.....	432	Bridgeport.....	1,537	15	1,077	423	1,537	1,552	Salt water.....
4 Ohio.....	Ryan, No. 13.....	429	McClusky.....	939	28	474	1,026	941	967	950 Flowing from McClusky sand.....
5 Ohio.....	Ryan, No. 3.....	429	Kirkwood.....	1,555	40	1,124	376	1,560	1,601	Tracy sand absent.....
6 Ohio.....	Ryan, No. 1.....	427	do.....	1,531	30	1,009	401	1,531	1,576	900 Flowing well. Gas, 1,763 feet.....
7 Unknown.....	School House Lot.....	427	Bridgeport.....	900	345	468	1,032			200
8 Ohio.....	G. Ryan, No. 4.....	427	Kirkwood.....	1,525	55	1,083	407			No record.....
9 Ohio.....	G. Ryan, No. 11.....	430	McClusky.....	1,771	3	1,339	161	1,772	1,775	Show.....
10 Ohio.....	G. Ryan, No. 10.....	427	Bridgeport.....	1,920	160	491	1,009			Slate, 1,542 to 1,547 feet.....
11 Ohio.....	G. Ryan, No. 7.....	427	Buchanan.....	1,260	85	831	669			Salt water, 950 feet.....
12 Ohio.....	G. Ryan, No. 6.....	430	Kirkwood.....	1,525	25	1,006	404	1,532		20 Gas, 1,524 feet.....
13 Ohio.....	G. Ryan, No. 5.....	432	McClusky.....	1,763		1,334	166			25 Gas, 1,530 feet.....
14 Ohio.....	G. Ryan, No. 2.....	432	Kirkwood-1.....	1,505	37	1,006	404	1,554	1,569	150
1 Ohio.....	T. Gillespie, No. 3.....	436	Kirkwood-2.....	1,512	26	1,085	415			140
2 Ohio.....	T. Gillespie, No. 6.....	440	Bridgeport.....	1,550	19	1,123	377			Well abandoned.....
3 Ohio.....	T. Gillespie, No. 23.....	435	Buchanan.....	1,505	37	1,078	422			125 Gas, 1,510 feet.....
			Kirkwood.....	1,547	16	1,120	380	1,554	1,569	230 Gas, 1,515 feet.....
			do.....	1,507	189	481	019			25 Gas, 1,530 feet.....
			do.....	1,526	31	1,096	404	1,584	1,557	
			do.....	1,537	31	1,096	404	1,584	1,557	
			do.....	1,542	25	1,105	395	1,547	1,583	
			do.....	1,585	2	1,110	390			
			do.....	1,510	15	1,074	426	1,590		
			do.....	1,534	15	1,098	402	1,515	1,576	
			do.....	1,515	39	1,075	425	1,515	1,554	
			do.....	1,505	135	520	970			
			do.....	1,260	80	815	685			
			do.....	1,513	45	1,080	420	1,520	1,560	

S. E.

23—
N. E.

N. W.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Name.	Altitude			Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.								
23— N. W.	4 Ohio.		T. Gillespie, No. 22.	430	925	175	495	1,005	Bridgeport.	1,250	80	1,500	.....	.....	.....	.....
	5 Ohio.		T. Gillespie, No. 17.	487	1,497	61	1,067	680	Buchanan.	1,497	820	1,500	.....	.....	30	Gas, 1,520 feet.
	6 Ohio.		T. Gillespie, No. 7.	481	1,538	34	1,051	449	do.	1,538	1,542	1,542	.....	.....	35	Gas, 1,542 feet.
	7 Ohio.		T. Gillespie, No. 8.	492	1,540	50	1,059	441	do.	1,540	1,584	1,584	.....	.....	40	Gas, 1,584 feet.
					1,293	107	801	699	Buchanan.	1,293	801	1,576	.....	.....	25	Gas, 1,576 feet.
					1,570	47	1,078	422	Kirkwood.	1,570	47	1,617	.....	.....	.....	.....
					1,294	106	790	710	Buchanan.	1,294	710	1,594	.....	.....	30	Gas, 1,594 feet.
S. W.	8 Ohio.		T. Gillespie, No. 9.	466	1,577	60	1,073	427	Kirkwood.	1,577	60	1,637	.....	.....	200	.....
	9 Ohio.		T. Gillespie, No. 10.	450	1,354	22	1,088	1,012	Bridgeport.	1,354	22	1,380	.....	.....	.....	.....
	1 Ohio.		T. Gillespie, No. 12.	449	1,526	153	1,076	733	Kirkwood.	1,526	153	1,679	.....	.....	45	Gas, 1,549 feet.
	2 Ohio.		T. Gillespie, No. 14.	449	1,515	37	1,066	424	do.	1,515	37	1,552	.....	.....	60	Gas, 1,520 feet.
	3 Ohio.		T. Gillespie, No. 15.	447	1,504	39	1,057	443	Kirkwood-1.	1,504	39	1,543	.....	.....	50	Gas, 1,535 feet.
	4 Ohio.		T. Gillespie, No. 2.	447	1,625	19	1,178	322	Kirkwood-2.	1,625	19	1,644	.....	.....	100	Gas, 1,515 feet.
	5 Ohio.		T. Gillespie, No. 4.	449	1,500	.....	1,053	447	do.	1,500	.....	1,520	.....	.....	30	Gas, 1,524 feet.
	6 Ohio.		T. Gillespie, No. 18.	450	1,524	.....	1,075	425	do.	1,524	.....	1,582	.....	.....	125	Gas, 1,535 feet.
					1,487	70	1,037	463	do.	1,487	70	1,557	.....	.....	.....	.....
	7 Ohio.		T. Gillespie, No. 20.	430	900	40	1,030	470	Bridgeport.	900	40	1,030	.....	.....	45	Gas, 1,510 feet.
					1,490	55	1,060	440	Kirkwood.	1,490	55	1,546	.....	.....	.....	.....
	8 Ohio.		T. Gillespie, No. 21.	430	925	75	495	1,005	Bridgeport.	925	75	1,005	.....	.....	.....	Salt water, 950 feet.
S. E.	1 Ohio.		Gould, No. 1.	445	1,250	80	820	680	Buchanan.	1,250	80	1,510	.....	.....	25	Gas, 1,510 feet.
	2 Ohio.		Gould, No. 10.	428	1,514	46	1,074	426	do.	1,514	46	1,565	.....	.....	125	Gas, 1,544 feet.
	3 Ohio.		Gould, No. 12.	427	1,490	51	1,069	431	do.	1,490	51	1,544	.....	.....	150	Gas, 1,520 feet.
	4 Ohio.		Gould, No. 13.	427	1,900	40	1,062	438	Bridgeport.	1,900	40	1,940	.....	.....	15	Gas, 1,520 feet.
	5 Ohio.		Gould, No. 8.	427	1,490	50	1,063	437	Kirkwood.	1,490	50	1,547	.....	.....	.....	.....

6 Ohio.....	Gould, No. 7.....	432	do.....	1,526	37	1,094	406	1,526	1,563	200 Gas, 1,526 feet.
7 Ohio.....	Gould, No. 6.....	446	do.....	1,538	32	1,092	408	1,538	1,570	260 Gas, 1,538 feet.
8 Ohio.....	Gould, No. 2.....	451	do.....	1,556	15	1,097	403	1,556	1,571	250 Gas, 1,556 feet.
9 Ohio.....	Gould, No. 5.....	475	do.....	1,568	16	1,093	407	1,568	1,584	Gas, 1,568 feet. Well abandoned.
10 Ohio.....	Gould, No. 11.....	479	do.....	1,572	28	1,093	407	1,572	1,600	25 Gas, 1,574 feet.
11 Ohio.....	Gould, No. 9.....	476	Buchanan.....	1,300	107	824	676	1,300	1,591	35 Gas, 1,561 feet.
12 Ohio.....	Mieure, No. 4.....	482	Kirkwood.....	1,563	28	1,087	413	1,568	1,591	35 Gas, 1,561 feet.
13 Ohio.....	Mieure, No. 1.....	477	Tracey.....	1,710	40	1,088	412	1,715	1,728	15
14 Ohio.....	Mieure, No. 3.....	457	Kirkwood.....	1,557	43	1,080	420	1,585	1,600	35 Gas, 1,585 feet.
15 Ohio.....	Gould, No. 3.....	457	do.....	1,539	20	1,082	418	1,539	1,559	125 Gas, 1,539 feet.
15 Ohio.....	Gould, No. 4.....	455	Buchanan.....	1,246	128	791	709	1,246	1,557	35 Gas, 1,537 feet.
15 Ohio.....	Gould, No. 4.....	455	Kirkwood.....	1,537	20	1,082	418	1,537	1,557	35 Gas, 1,537 feet.
1 Busch-Everett.....	Brunson, No. 1.....	455	do.....	1,551	35	1,090	401	1,551	1,616	Dry No record.
2 Central Refining Co.....	Hollister, No. 1.....	484	Kirkwood.....	1,040	60	588	912	1,040	1,616	30 do.
1 Ohio.....	Lewis, No. 4.....	482	Bridgeport.....	1,375	23	923	577	1,375	1,616	30 do.
2 Ohio.....	Lewis, No. 7.....	452	Stray.....	1,580	52	1,128	372	1,580	1,616	20 Gas, 1,584 feet. Tracy sand absent.
3 Ohio.....	Lewis, No. 1.....	432	McClosky.....	1,895	3	1,443	57	1,895	1,923	Show Salt water, 1,900 feet.
4 Ohio.....	Lewis, No. 2.....	472	Kirkwood.....	1,567	15	1,135	365	1,567	1,934	Dry
1 Ohio.....	Lewis, No. 3.....	469	Tracey.....	1,710	5	1,278	222	1,710	1,934	50
2 Ohio.....	Lewis, No. 5.....	477	Kirkwood.....	1,583	4	1,111	389	1,583	1,934	50
3 Ohio.....	Lewis, No. 6.....	495	Bridgeport and Buchanan.....	1,170	220	701	799	1,170	1,934	45 Gas, 1,565 feet.
4 Mahugh.....	Irwin, No. 1.....	476	do.....	1,555	27	1,086	414	1,555	1,934	200 Gas, 1,595 feet.
5 Mahugh.....	Irwin, No. 4.....	477	do.....	1,584	38	1,107	393	1,584	1,934	Show
6 Mahugh.....	Irwin, No. 3.....	468	do.....	1,635	28	1,140	360	1,635	1,934	Dry Salt water, 2,070 feet.
7 Mahugh.....	Irwin, No. 2.....	470	Tracey.....	1,739	20	1,244	256	1,739	1,934	Dry No record.
8 Ohio.....	Mieure, No. 3.....	477	do.....	1,580	12	1,103	397	1,580	1,934	20 do.
9 Ohio.....	Mieure, No. 5.....	473	Kirkwood.....	1,900	40	1,427	1,073	1,900	1,934	30 Gas, 1,600 feet.
10 Ohio.....	Mieure, No. 7.....	489	Bridgeport.....	1,595	23	1,122	378	1,595	1,934	30 Gas, 1,600 feet.
11 Ohio.....	Mieure, No. 2.....	489	Kirkwood.....	1,842	14	1,353	407	1,842	1,934	Dry well.
12 Ohio.....	Mieure, No. 6.....	509	Buchanan.....	1,315	95	826	674	1,315	1,934	Dry Salt water, 2,004 feet.
			McClosky.....	1,582	28	1,093	407	1,582	1,934	Dry Salt water, 1,615 feet.
			Kirkwood.....	1,842	14	1,353	407	1,842	1,934	Dry Salt water, 925 feet.
			Bridgeport.....	1,582	41	1,093	407	1,582	1,934	Salt water, 1,875 feet.
			Stray.....	1,925	115	416	1,084	1,925	1,934	Gas, 1,855 feet. Well abandoned.
			Kirkwood.....	1,440	15	931	569	1,440	1,934	
			McClosky.....	1,595	80	1,086	414	1,595	1,934	
				1,855	15	1,346	154	1,855	1,934	

24-
N. E..
N. W..

S. W..

[illegible]

N. W.-

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks	
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
N. W.	11	Leighty	Leighty, No. 6.	510	Kirkwood-1.	1,614	38	1,104	396					
					Kirkwood-2.	1,675	15	1,165	335					
	12	Leighty	Leighty, No. 3.	487	Tracey	1,703	32	1,193	307					
					McClosky	1,844	18	1,334	166			1,866	9	Salt water, 1,862 feet.
	13	Leighty	Leighty, No. 7.	490	Kirkwood	1,574	40	1,087	413				15	Tracey sand, dry.
					Tracey	1,691	25	1,204	296					
					Kirkwood-1.	1,604	8	1,114	386					
					Kirkwood-2.	1,615	18	1,125	375					
					Kirkwood-3.	1,645	11	1,155	345					
					McClosky	1,830	29	1,340	160			1,859	200	
	14	Ohio	Snyder, No. 8.	502	Bridgeport.	1,000	180	498	002	1				
					Buchanan	1,320	120	818	682					Salt water, 1,020 feet.
					Tracey	1,605	25	1,103	397					Salt water, 1,350 feet.
					McClosky	1,720	10	1,218	282					Gas, 1,609 feet.
				Tracey	1,832	6	1,330	170					Gas, 1,730 feet.	
				Bridgeport	1,050	150	555	945					Gas, 1,832 feet.	
15	Ohio	Snyder, No. 7.	495	Buchanan	1,300	805	695						Salt water, 1,125 feet.	
				Kirkwood	1,632	30	1,217	373					Salt water, 1,320 feet.	
				Tracey	1,708	12	1,213	287					Gas, 1,623 feet.	
				McClosky	1,834	10	1,339	161			2,000	20		
1	Ohio	Vandermark, No. 16.	495	Bridgeport.	1,000	75	505	995						
				Buchanan	1,280	120	785	715						
				Kirkwood	1,620	13	1,255	375						
				Tracey	1,715	3	1,220	280						
				McClosky	1,826	3	1,331	169						
				Bridgeport.	1,055	45	543	957				1,833	100	Gas, 1,826 feet.
2	Ohio	Vandermark, No. 11.	512	Buchanan	1,325	75	813	687					Salt water.	
				Kirkwood	1,623	17	1,111	689					Salt water.	
				Tracey	1,720	15	1,208	292						
				McClosky	1,841	7	1,329	171				1,850	150	Gas, 1,841 feet.

3	Ohio.....	Vandermark, No. 15.....	496	Bridgeport..... Buchanan..... Kirkwood..... Tracey..... McClosky.....	1,950 1,290 1,492 1,571 1,823	50 40 30 14 5	554 764 404 1,595 285	946 736 404 1,595 1,713	1,828	720	Gas, 1,823 feet.	Salt water, 1,055 feet.
4	Ohio.....	Vandermark, No. 17.....	474	Buchanan..... Kirkwood..... Tracey..... McClosky.....	1,800 1,369 1,682 1,800	6 23 12 6	1,326 405 292 1,326	1,800 1,575 1,690 1,800	1,806	1,500	Flowing well. Gas, 1,800 feet. Quit in limestone	
5	Ohio.....	Vandermark, No. 3.....	484	Kirkwood.....	1,612	26	1,128	372	1,618	25		
6	Ohio.....	Vandermark, No. 4.....	502	do.....	1,638	23	1,136	364				
7	Ohio.....	Vandermark, No. 2.....	527	Tracey.....	1,722	16	220	280	1,729	60	Gas, 1,728 feet.	
8	Ohio.....	Vandermark, No. 7.....	507	Bridgeport.....	1,020	23	493	1,007	1,035	40		
9	Ohio.....	Vandermark, No. 6.....	503	Kirkwood.....	1,633	27	1,126	374	1,646	45	Gas, 1,645 feet.	
				do.....	1,630	40	1,127	373				
				Tracey.....	1,713	20	210	290	1,728	30	Gas, 1,723 feet.	
				Bridgeport.....	1,010	75	495	1,005			Salt water, 1,030 feet.	
				Buchanan.....	1,360	65	845	635			Salt water, 1,375 feet.	
10	Ohio.....	Vandermark, No. 14.....	515	Kirkwood.....	1,640	15	1,125	375				
				Tracey.....	1,721	14	206	294				
				McClosky.....	1,841	14	1,326	174	1,845	1,855	Gas, 1,841 feet.	
				Shallow.....	650	50	179	1,321			Salt water.....	
				Bridgeport.....	1,000	205	529	971			Hole full of water, 1,040 feet.	
11	International Oil & Gas Co.....	McClosky, No. 1.....	471	Buchanan..... Kirkwood..... Stray..... Tracey.....	1,325 1,612 1,663 1,705	100 27 8 14	854 1,141 1,192 1,234	646 359 308 266	1,618 1,710	60	Salt water, 1,663 feet.	
				McClosky.....	1,842		1,371	129				
12	International Oil & Gas Co.....	McClosky, No. 8.....	481	Kirkwood..... McClosky.....	1,600 1,832	35 28	1,119 1,351	381 149	1,620	100		
13	International Oil & Gas Co.....	McClosky, No. 9.....	485	Kirkwood..... McClosky..... Bridgeport.....	1,597 1,810 1,990	30 12 210	1,112 1,225 510	388 175 990		300		
14	International Oil & Gas Co.....	McClosky, No. 4.....	480	Kirkwood..... Stray..... Tracey..... McClosky.....	1,591 1,639 1,693 1,824	35 6 36 13	1,111 1,179 213 1,344	389 321 287 156			Salt water, 1,659 feet.	
				Bridgeport.....	1,000	75	495	1,005		1,837	1,700	
				Buchanan.....	1,350	70	845	655				
15	Ohio.....	Vandermark, No. 10.....	505	Kirkwood.....	1,630	25	1,125	375				
				Tracey.....	1,740	10	1,235	265				
				McClosky.....	1,843	9	1,338	162	1,844	1,855	Gas, 1,843 feet.	
1	Ohio.....	Vandermark, No. 1.....	519	Kirkwood.....	1,611	37	1,092	1,622	1,648	80	Gas, 1,622 feet.	

S. E.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
25— S. E....	2	Ohio.....	Vandermark, No. 9.....	500	{	Bridgeport.....	980	120	480	1,020	.....	.....	Salt water, 1,005 feet.....
						Buchanan.....	1,285	95	785	715	.....	.....	Salt water, 1,330 feet.....
3	Ohio.....	Vandermark, No. 12.....	495	{	{	Kirkwood.....	1,605	30	1,005	395	.....	.....	.....
						Tracey.....	1,710	10	1,210	290	.....	.....	.....
						McClosky.....	1,828	12	1,328	172	.....	.....	.....
						Stray.....	1,898	7	1,398	102	.....	.....	.....
						Bridgeport.....	1,960	90	1,460	1,035	2,101	Dry	Salt water.....
						Buchanan.....	1,300	100	805	695	.....	.....	Salt water, 1,000 feet.....
						Kirkwood.....	1,612	33	1,117	383	.....	.....	Salt water, 1,330 feet.....
						Tracey.....	1,705	10	1,210	290	.....	.....	.....
						McClosky.....	1,832	9	1,337	163	.....	.....	.....
						Kirkwood.....	1,607	37	1,118	382	.....	.....	.....
4	Ohio.....	Vandermark, No. 8.....	489	{	{	McClosky.....	1,823	16	1,334	166	1,823	1,200	Gas, 1,822 feet.....
						Bridgeport.....	1,990	110	1,481	1,019	.....	.....	Salt water, 1,400 feet.....
						Buchanan.....	1,335	95	876	624	.....	.....	Salt water, 1,400 feet.....
						Kirkwood.....	1,617	30	1,108	392	.....	.....	Gas, 1,618 feet.....
						McClosky.....	1,829	6	1,330	170	.....	.....	Gas, 1,839 feet.....
						Kirkwood.....	1,616	29	1,107	393	1,622	1,646	1,860 Gas, 1,839 feet.....
						Bridgeport.....	1,925	426	1,074	.....	.....	.....	160 Gas, 1,620 feet.....
						Buchanan.....	1,328	100	829	671	.....	.....	.....
						Kirkwood.....	1,616	24	1,117	383	.....	.....	.....
						Tracey.....	1,710	1	1,211	289	.....	.....	.....
5	Ohio.....	International Oil & Gas Co.....	McClosky, No. 2.....	499	{	McClosky.....	1,842	1	1,343	157	.....	.....	.....
						Bridgeport.....	1,000	210	522	978	.....	.....	Salt water.....
						Buchanan.....	1,325	100	847	653	.....	.....	do.....
						Kirkwood.....	1,625	60	1,147	353	.....	.....	.....
						Tracey.....	1,695	35	1,217	283	.....	.....	.....
						McClosky.....	1,820	11	1,342	158	1,820	1,831	Calcareous sand.....
						McClosky.....	1,820	11	1,342	158	1,820	1,831	Soft limestone.....
						McClosky.....	1,820	11	1,342	158	1,820	1,831	.....
						McClosky.....	1,820	11	1,342	158	1,820	1,831	.....
						McClosky.....	1,820	11	1,342	158	1,820	1,831	.....
9	International Oil & Gas Co.....	McClosky, No. 7.....	483	{	{	Kirkwood.....	1,605	26	1,122	378	.....	.....	.....
						McClosky.....	1,820	15	1,337	163	.....	.....	.....

10	International Oil & Gas Co.	McClosky, No. 6.	472	Kirkwood-Tracey.	1,602 1,712 1,804	18 12 11	1,130 240 260	370	1,815	1,200	
11	International Oil & Gas Co.	McClosky, No. 3.	469	Bridgeport-Buchanan.	985 1,330 1,587	100 100 100	516 861 639	984			
12	Associated Producers.	Snyder, No. 11.	468	Kirkwood-McClosky.	1,692 1,807 896	20 4 12	223 338 428	1,700	1,811	400	
13	Associated Producers.	Snyder, No. 14.	462	Bridgeport-Buchanan.	1,312 1,580 898	32 13 14	112 232 436	656			
14	Associated Producers.	Snyder, No. 5.	460	Kirkwood-McClosky.	1,312 1,578 794	44 44 44	850 350 1,116	650			
15	Associated Producers.	Snyder, No. 16.	468	Bridgeport-Buchanan.	1,900 1,307	83	440 847	1,060	1,801	200	
16	Associated Producers.	Snyder, No. 15.	474								No record
17	Associated Producers.	Snyder, No. 17.	465								do.
18	International Oil & Gas Co.	Seed, No. 2.	477	Kirkwood.	1,615	40	1,138	362		60	Well abandoned.
19	International Oil & Gas Co.	Seed, No. 3.	485								No record
20	International Oil & Gas Co.	Seed, No. 4.	487								do.
21	International Oil & Gas Co.	Seed, No. 1.	487	Kirkwood.	1,600	20	1,113	387			Well abandoned.
1	Leighty.	Leighty, No. 2.	462	do-Tracey.	1,553 1,650	5 33	1,091 1,188	409 312	1,567 1,669	Light	5 Salt water, 1,683 feet. Locally known as Mulholland sand. Original well ruined. No record.
2	Leighty.	Leighty, No. 8.	488								
3	Leighty.	Leighty, No. 8.	488	Kirkwood-1-Kirkwood-2.	1,591 1,638	17 19	1,103 1,150	397 350			
4	Leighty.	Leighty, No. 1.	465	Tracey.	1,827	24	1,339	301			
5	Leighty.	Leighty, No. 9.	481	McClosky.	1,897	33	1,081	419	1,801	20	
6	Leighty.	Leighty, No. 10.	501	Kirkwood-Bridgeport.	1,546 961	33 28	1,081 477	1,558	1,579	50	
7	Leighty.	Leighty, No. 4.	492	Bridgeport-Buchanan.	979 1,297	36 15	487 805	1,013 695	985	10	Drilling
8	Big Four.	S. Gillespie, No. 4.	500	Kirkwood-1-Kirkwood-2.	1,575 1,608	28 12	1,083 1,116	417 384	1,597		
				Tracey.	1,698	22	1,206	294	1,699	1,743	200
				Kirkwood-1.	1,598	14	1,098	402	1,602		
				Kirkwood-2.	1,625	13	1,125	375	1,625		50
				Tracey.	1,698	27	1,198	302			Show
				McClosky.	1,836		1,336	164	1,855		

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— N. E...	9	Big Four	S. Gillespie, No. 1	488	Kirkwood	1,615	11	1,127	373	1,590	1,615	25	Gas, 1,585 feet.
	10	Ohio	Gray, No. 3	478	do.	1,553	62	1,075	425	1,590	1,615	25	Gas, 1,585 feet.
	11	Ohio	Gray, No. 4	472	Buchanan	1,207	192	1,735	765	1,555	1,630	10	Gas, 1,555 feet.
	12	Ohio	Gray, No. 2	462	Kirkwood	1,545	85	1,073	427	1,557	1,584	50	Gas, 1,557 feet.
	13	Ohio	Gray, No. 1	447	do.	1,498	81	1,036	464	1,523	1,547	65	Gas, 1,523 feet.
	14	Ohio	Gray, No. 9	462	Bridgeport	1,523	24	1,076	424	1,550	1,586	75	Salt water, 980 feet.
	15	Ohio	Gray, No. 6	462	Buchanan	1,955	95	1,493	1,007	1,550	1,586	75	Gas, 1,545 feet.
	16	Ohio	Gray, No. 7	472	Kirkwood	1,200	60	1,083	417	1,550	1,586	40	Gas, 1,545 feet.
	17	Ohio	Gray, No. 5	472	do.	1,545	35	1,492	1,008	1,550	1,586	40	Gas, 1,545 feet.
	18	Ohio	Gray, No. 8	480	Bridgeport	954				964	993		993 feet.
	1	Ohio	E. Ryan, No. 3	455	Kirkwood	890	111	418	1,082	1,568	1,623	100	Gas, 1,568 feet.
	2	Ohio	E. Ryan, No. 4	464	Bridgeport	1,568	25	1,096	404	1,568	1,623	100	Gas, 1,568 feet.
	3	Silurian	Hinkle, No. 2	459	Buchanan	950	41	1,023	965	1,568	1,623	100	Gas, 1,568 feet.
	4	Silurian	Hinkle, No. 4	471	Kirkwood	1,259	13	1,066	434	1,563	1,602	60	Gas, 1,563 feet.
N. W..	5	Silurian	Hinkle, No. 3	474	Bridgeport	1,559	24	1,079	421	1,563	1,602	150	Gas, 1,563 feet.
	6	Ohio	E. Ryan, No. 1	449	Kirkwood	1,521	24	1,066	434	1,525	1,545	12	Salt water.
	7	Ohio	E. Ryan, No. 2	456	do.	973	20	509	991	975	1,545	10	Salt water, 1,290 feet.
					Tracey	1,287	63	823	677	1,305	1,305	10	Gas, 1,548 feet.
					Bridgeport	1,538	38	1,074	426	1,548	1,548	10	Gas, 1,548 feet.
					Bridgeport	1,648	20	1,184	316	1,656	1,656	10	Salt water, 982 feet.
					Bridgeport	968	17	509	991	980	980	No record.	No record.
					Bridgeport	964		490	1,010	972	972	125	125
					Tracey	1,545	35	1,071	429	1,545	1,545	60	60
					Kirkwood	1,650	18	1,176	324	1,524	1,524	1,524	1,524
					do.	1,500	24	1,051	449	1,510	1,510	1,510	1,510
					do.	1,310	19	1,054	446	1,550	1,550	1,550	1,550

S. W.	4 Fisher. 1 Ohio.	Lacey, No. 1 Wm. Seed, No. 1	505 531	Bridgeport.	980	46	449	1,051	1,005	1,026	Dry No record. Gas Gas, 998 feet; gas 2,500,000 cu. ft. daily.
S. E.	1 Ohio. 2 Ohio. 3 Ohio. 4 Ohio. 5 Ohio.	P. Leighty, No. 13. P. Leighty, No. 2. P. Leighty, No. 1. P. Leighty, No. 5. P. Leighty, No. 15.	528 505 534 540 513	{ do. do. do. do. Buchanan. Kirkwood.	{ 977 960 970 985 1,012 960 1,260 1,577	{ 52 47 436 21 44 140 110 23	{ 449 453 436 445 472 747 1,064 436	{ 1,051 1,045 1,064 1,055 1,028 1,053 1,031 1,580	{ 995 961 1,000 1,031 1,056 1,031 1,580	{ 1,034 1,007 1,000 1,056 1,056 1,031 1,604	{ 30 Gas, 995 feet. 180 Gas Gas, 1,000 feet. Gas Gas, 998 feet. 20 60 Gas, 1,580 feet. Quit in sand.
28— N. W.	6 Ohio.	E. Robins, No. 1.	496	{ Bridgeport. Buchanan. Kirkwood.	{ 965 1,254 1,538	{ 105 22 35	{ 469 758 1,042	{ 1,031 742 458	{ 1,540 1,573	{ No record. 75 Gas, 1,540 feet.	
S. E.	1 Unknown. 2 Ohio. 1 St. Louis. 2 St. Louis.	H. K. Seed, No. 1. E. Gillespie, No. 4. Turner Hrs., No. 2. Turner Hrs., No. 1.	491 478 498 508	{ Buchanan. Kirkwood.	{ 1,510 1,960	{ 110 15	{ 1,032 1,482	{ 468 18	{ 1,962 2,063	{ Show Salt water, 1,800 feet. Well abandoned. Dry No record. Dry do.	
30— N. E.	1 Ohio.	R. Ackman, No. 1.	480	Kirkwood.	1,587	25	1,107	393	1,602	1,810	1 1/2 Gas, 1,598 feet. Salt wa- ter, 1,615 feet. Well abandoned.
N. W.	1 Central Refining Co. 2 Associated Producers. 3 Associated Producers. 4 Associated Producers. 5 Associated Producers. 6 Associated Producers. 7 Associated Producers. 1 Associated Producers. 2 Associated Producers. 3 Associated Producers.	Snyder, No. 2. Snyder, No. 8. Snyder, No. 7. Snyder, No. 9. Barnhart, No. 4. Barnhart, No. 5. Barnhart, No. 6. Barnhart, No. 1. Barnhart, No. 2. Barnhart, No. 3.	478 469 474 469 467 460 458 456 456 456	{ do. Buchanan. Kirkwood-1. Kirkwood-2. Buchanan. Kirkwood-1. Kirkwood-2. Kirkwood-1. Kirkwood-2. Stray. Bridgeport. Buchanan. Bridgeport. Kirkwood. Buchanan. Kirkwood.	{ 1,586 1,582 1,628 1,315 1,380 1,630 1,584 1,628 700 960 1,300 918 1,600 1,300 1,602 902 1,305 1,565	{ 51 22 12 22 22 22 22 22 14 23 960 18 5 18 34 34 16	{ 1,108 846 1,113 1,169 841 1,106 1,136 1,115 1,139 267 493 833 667 1,440 360 842 356 446 1,051 849 391	{ 392 654 387 341 659 394 344 385 341 1,645 1,007 458 1,042 360 658 356 902 849 391	{ 1,586 1,637 1,643 1,648 1,648 1,645 1,660 1,650 1,640 902 1,565 918 1,650 35 180 1,600	{ Dry No record. Dry Gas, 1,598 feet. Salt wa- ter, 1,615 feet. Well abandoned. Dry No record. Dry do. Dry No Kirkwood sand 60 Salt water. 35 180 30 Dry No record.	
S. W.	4 Busch-Everett. 5 Busch-Everett.	Vandermark, No. 1. Vandermark, No. 2.	460 454	{ Bridgeport. Kirkwood. do.	{ 980 1,385 1,600	{ 520 1,355 1,620 1,146	{ 980 925 575 354	{ 1,600	{ Dry	{ Dry	

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Name.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
31— N. W..	1	Ohio.....	Vanwey, No. 5.....	460	Bridgeport.....	950	25	490	1,010	.....	.....	.....	.....	.....
					Bridgeport and Buchanan.....	1,200	90	740	760	.....	.....	.....	.....	.....
					Kirkwood.....	1,565	16	1,105	395	1,573	1,581	15	Gas, 1,565 feet.....	.....
	2	Ohio.....	Vanwey, No. 4.....	456	Bridgeport.....	980	80	524	976	.....	.....	.....	Salt water, 1,010 feet.....	.....
Buchanan.....					1,290	80	834	666	.....	.....	.....	Salt water, 1,300 feet.....	.....
S. W..	1	Ohio.....	Vanwey, No. 2.....	460	Kirkwood.....	1,556	21	1,100	400	1,562	1,578	20	Gas, 1,560 feet.....	.....
					do.....	1,567	20	1,107	393	.....	.....	.....	.....	.....
					Tracey.....	1,765	43	1,305	195	.....	.....	.....	Salt water, 1,808 feet.....	.....
	2	Ohio.....	Vanwey, No. 1.....	460	McClosky.....	1,870	50	1,410	90	.....	2,000	Dry	Salt water, 1,915 and 1,975 feet.....	.....
					Kirkwood-1.....	1,565	25	1,105	395	1,570	.....	.....	Gas, 1,575 feet.....	.....
S. E..	3	Donnell, Agent.....	Burkett, No. 2.....	458	Kirkwood-2.....	1,610	3	1,150	350	.....	1,699	.....	Salt water.....	.....
					Kirkwood.....	1,570	112	1,112	338	1,579	1,600	36	Gas, 1,575 feet.....	.....
					Bridgeport.....	980	195	531	969	.....	.....	.....	Salt water, 1,050 feet.....	.....
	4	Ohio.....	Vanwey, No. 3.....	449	Buchanan.....	1,260	125	811	689	1,573	1,603	5	Gas, 1,572 feet.....	.....
					Kirkwood.....	1,566	37	1,117	383	.....	.....	.....	.....	.....
32— S. E..	5	Ohio.....	E. Leighty, No. 3.....	420	do.....	1,504	30	1,144	386	.....	.....	.....	Salt water, 1,954 feet.....	.....
					Stray.....	1,945	16	1,525	25	.....	1,961	.....	Gas, 1,610 feet.....	.....
					Jordan, No. 4.....	1,545	101	1,127	373	1,546	1,717	.....	.....	.....
	6	Donnel, Agent.....	Burkett, No. 1.....	422	Kirkwood.....	934	512	988	512	.....	1,712	Dry	.....	.....
Kirkwood-1.....					1,540	10	1,128	372	1,540	.....	.....	.....	.....
33— S. W..	1	Cochran.....	Seed, No. 1.....	412	Kirkwood-2.....	1,575	6	1,163	337	.....	1,608	25	Salt water, 1,590 feet.....	Well abandoned.
					L. Vandermark, No. 4.....	533	51	443	1,057	1,001	1,027	25	Gas, 986 feet.....	.....
					L. Vandermark, No. 1.....	517	12	436	1,064	.....	.....	.....	Gas, 954 feet.....	.....
	2	Ohio.....	L. Vandermark, No. 5.....	540	do.....	972	48	432	1,068	1,000	1,020	25	Gas, 978 feet.....	.....
					L. Vandermark, No. 3.....	908	32	450	1,050	1,013	1,030	20	Gas, 999 feet.....	.....
34— N. E..	5	Ohio.....	L. Vandermark, No. 2.....	523	do.....	957	43	431	1,066	.....	987	.....	Gas, 977 feet.....	.....
					L. Vandermark, No. 2.....	987	2	455	1,045	.....	990	.....	Gas, 987 feet.....	.....
					S. Gee, No. 2.....	980	.....	.....	.....	.....	.....	.....	.....	.....
	6	Ohio.....	L. Vandermark, No. 1.....	533	Bridgeport.....	976	51	443	1,057	1,001	1,027	25	Gas, 986 feet.....	.....
					do.....	953	12	436	1,064	.....	.....	.....	Gas, 954 feet.....	.....

7 Ohio.....	S. Gee, No. 12.....	532	do.....	985	451	453	1,047	1,010	1,016	55 Gas, 1,010 feet.....
8 Ohio.....	S. Gee, No. 5.....	543	do.....	990	26	447	1,053	1,004	1,011	20 Gas, 1,000 feet.....
9 Ohio.....	S. Gee, No. 9.....	521	do.....	951	70	430	1,070	1,011	1,011	60
10 Ohio.....	S. Gee, No. 10.....	536	do.....	993	41	457	1,043	1,020	1,034	20 Gas, 1,000 feet.....
11 Ohio.....	S. Gee, No. 13.....	539	Buchanan.....	1,300	100	761	739	.....	.....	Salt water.....
			Kirkwood.....	1,600	34	1,061	439	1,600	1,634	135 Gas, 1,600 feet. Quit in sand.....
12 Ohio.....	S. Gee, No. 4.....	544	Bridgeport.....	992	37	448	1,052	1,011	1,029	45 Gas, 995 feet.....
13 Ohio.....	S. Gee, No. 11.....	532	do.....	998	32	466	1,034	1,000	1,030	125 Gas, 995 feet.....
14 Ohio.....	S. Gee, No. 6.....	539	do.....	989	46	450	1,050	1,010	1,035	50 Gas, 990 feet.....
15 Ohio.....	S. Gee, No. 1.....	539	do.....	975	.....	436	1,064	.....	.....	Gas, well abandoned
16 Ohio.....	S. Gee, No. 7.....	543	do.....	995	45	422	1,078	995	1,010	60 Gas, 978 feet.....
17 Ohio.....	H. Gould, No. 2.....	532	do.....	939	75	427	1,078	1,000	1,017	100 Gas, 995 feet.....
18 Ohio.....	H. Gould, No. 3.....	534	do.....	953	71	419	1,081	1,000	1,021	50 Gas, 953 feet.....
19 Ohio.....	S. Gee, No. 8.....	527	do.....	948	73	421	1,079	980	1,000	35 Gas, 948 feet.....
20 Ohio.....	L. Vandermark, No. 3.....	527	do.....	981	42	454	1,046	996	1,023	35 Gas, 981 feet. Quit in white sand.....
21 Ohio.....	L. Vandermark, No. 1.....	532	do.....	1,005	19	473	1,027	1,012	1,024	60 Gas, 1,005 feet.....
22 Ohio.....	S. Gee, No. 3.....	531	do.....	989	25	458	1,042	1,001	1,014	100 Gas, 1,001 feet.....
3 Ohio.....	S. Vandermark, No. 1.....	526	do.....	998	30	472	1,028	1,005	1,028	30
5 Ohio.....	L. Vandermark, No. 2.....	521	do.....	990	36	469	1,031	991	1,025	90 Gas, 990 feet. Quit in sand.....
6 Ohio.....	J. Vandermark, No. 2.....	512	do.....	991	16	479	1,021	997	1,007	90 Gas, 993 feet.....
7 Ohio.....	J. Vandermark, No. 1.....	506	do.....	994	30	488	1,012	997	1,024	45 Gas, 1,010 feet.....
1 Ohio.....	J. Dennison, No. 1.....	495	do.....	1,047	113	552	948	.....	.....	Salt water.....
			Buchanan.....	1,264	28	769	731	.....	1,300	Dry
2 Wheeler-James.....	V. Dennison, No. 1.....	495	do.....	959	33	456	1,044	974	992	No record.....
1 Ohio.....	Gray, No. 11.....	503	Bridgeport.....	990	37	484	1,016	995	1,027	150 Gas, 975 feet.....
2 Ohio.....	Gray, No. 1.....	506	do.....	990	37	484	1,016	995	1,027	65 Gas, 995 feet.....
3 Ohio.....	Gray, No. 2.....	499	do.....	971	41	472	1,028	981	1,012	75
4 Ohio.....	Gray, No. 7.....	515	do.....	965	37	450	1,050	985	1,002	150 Gas, 972 feet.....
5 Ohio.....	Gray, No. 5.....	518	do.....	980	30	462	1,038	990	1,019	200 Gas, 985 feet.....
6 Ohio.....	Gray, No. 10.....	519	do.....	994	38	445	1,055	991	1,022	200 Gas, 985 feet.....
7 Ohio.....	Gray, No. 9.....	519	do.....	952	50	453	1,067	989	1,022	60 Gas, 992 feet.....
8 Ohio.....	Gray, No. 8.....	514	do.....	972	22	438	1,042	979	994	75 Gas, 975 feet.....
9 Ohio.....	Gray, No. 6.....	522	do.....	955	85	433	1,067	1,020	1,030	50 Gas, 1,019 feet.....
10 Ohio.....	Gray, No. 3.....	526	do.....	966	65	440	1,060	1,016	1,031	60
11 Ohio.....	Gray, No. 13.....	523	do.....	988	.....	465	1,035	988	988	Dry
12 Ohio.....	Gray, No. 14.....	522	do.....	987	27	465	1,035	992	1,014	60 Gas, 992 feet.....
13 Ohio.....	Gray, No. 12.....	535	do.....	1,005	46	470	1,030	1,016	1,031	15
14 Ohio.....	Gray, No. 4.....	514	do.....	973	62	459	1,041	1,028	1,035	Salt water, 1,035 feet. Well abandoned.....
			do.....	975	20	486	1,014	.....	.....
1 Ohio.....	G. Ryan, No. 14.....	489	Buchanan.....	1,305	40	816	684	.....	.....
			Kirkwood.....	1,572	28	1,083	417	1,573	417	Gas, 1,572 feet.....
			Tracey.....	1,680	25	1,191	309	1,702	.....	Gas, 1,685 feet.....
			McCloskey.....	1,805	5	1,316	184	1,805	1,810	1,440 Gas, 1,806 feet.....
2 Ohio.....	Ryan, No. 8.....	474	Bridgeport.....	937	29	453	1,047	956	956	
3 Ohio.....	Ryan, No. 6.....	479	do.....	902	52	423	1,077	944	944	100 Gas, 902 feet.....

N. W..

S. W..

S. E..

33-

N. E..

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Name.	Oil depth—feet.				Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.		Total depth—feet.					
35— N. E...	4	Ohio.....	Ryan, No. 1.....	465	Bridgeport.....	904	52	439	1,061	925	956	.....	Gas, 904 feet. Gas, 2,000- 000 cubic feet daily.....	
	5	Ohio.....	Ryan, No. 2.....	472	do.....	925	58	453	1,047	940	983	150	Gas, 931 feet.....		
	6	Ohio.....	Ryan, No. 3.....	505	do.....	982	33	477	1,023	988	1,021	125	No record. Drilling.....		
	7	Big Four.....	L. Gillespie, No. 7.....	487	Bridgeport.....	915	54	438	1,062	938	.....	.....	.....
	8	Big Four.....	L. Gillespie, No. 17.....	477	do.....	904	51	436	1,064	923	.....	.....	.....
	9	Big Four.....	L. Gillespie, No. 6.....	477	do.....	934	42	462	1,038	947	976	.....	Gas, 958 feet.....	
	10	Big Four.....	L. Gillespie, No. 5.....	468	do.....	.....	.....	.....	.....	.....	.....	.....	No record.
	11	Big Four.....	L. Gillespie, No. 3.....	472	do.....	.....	.....	.....	.....	.....	.....	.....	No record.
	12	Big Four.....	L. Gillespie, No. 16.....	471	Bridgeport.....	947	34	473	1,027	954	981	60	.....	
	13	Big Four.....	L. Gillespie, No. 11.....	474	do.....	947	33	468	1,032	955	980	75	100 Gas, 952 feet.....		
	14	Big Four.....	L. Gillespie, No. 15.....	479	do.....	952	26	463	1,037	953	978	200	Gas, 928 feet.....		
	15	Ohio.....	W. Gould, No. 7.....	489	do.....	910	63	436	1,064	939	973	200	Gas, 909 feet.....		
	16	Ohio.....	W. Gould, No. 6.....	474	do.....	909	49	436	1,054	920	958	165	Gas, 895 feet.....		
	17	Ohio.....	W. Gould, No. 2.....	463	do.....	895	65	431	1,069	920	960	165	Gas, 895 feet.....		
	18	Ohio.....	L. Leighty, No. 7.....	464	do.....	895	59	430	1,071	915	954	150	Gas, 898 feet.....		
	19	Ohio.....	L. Leighty, No. 12.....	466	do.....	933	42	467	1,033	945	975	75	Gas, 940 feet.....		
	20	Ohio.....	L. Leighty, No. 13.....	466	do.....	955	29	491	1,009	.....	.....	.....	.....
	21	Ohio.....	L. Leighty, No. 10.....	464	Kirkwood.....	932	36	478	1,022	1,554	1,578	100	Gas, 1,552 feet.....		
	N. W..	1	Ohio.....	L. Leighty, No. 2.....	476	Bridgeport.....	911	87	435	1,065	912	998	60	Gas, 912 feet.....	
		2	Ohio.....	L. Leighty, No. 19.....	471	do.....	No record	
		3	Ohio.....	L. Leighty, No. 17.....	479	Bridgeport.....	954	30	475	1,025	964	984	125	Gas, 955 feet.....	
4		Ohio.....	L. Leighty, No. 18.....	493	do.....	975	25	482	1,018	976	1,001	125	Gas, 976 feet.....		
5		Ohio.....	L. Leighty, No. 11.....	524	do.....	950	73	426	1,074	983	1,023	200	Gas, 963 feet.....		
6		Ohio.....	L. Leighty, No. 5.....	521	do.....	956	39	435	1,065	977	995	25	Gas, 966 feet.....		
7		Ohio.....	L. Leighty, No. 1.....	521	do.....	945	14	424	1,076	959	959	Gas	Gas, 948 feet.....		
8		Ohio.....	H. Gould, No. 1.....	520	do.....	934	10	414	1,086	944	944	Gas	Gas, 939 feet.....		
9		Ohio.....	H. Gould, No. 4.....	511	do.....	946	84	435	1,065	1,050	1,050	Dry	Salt water, 1,020 feet.....		
10		Ohio.....	W. Gould, No. 8.....	503	do.....	977	25	474	1,026	983	1,002	100	Gas, 982 feet.....		
S. W..	1	Ohio.....	H. Gould, No. 5.....	498	do.....	956	52	458	1,012	967	1,008	40	Gas, 956 feet. Quit in sand.....		

2 Ohio	T. Gould, No. 16	484	do	905	82	421	1,079	959	987	20 Gas, 925 feet
3 Ohio	T. Gould, No. 11	416	do	945	55	429	1,071	980	1,000	15 Gas, 950 feet
4 Ohio	T. Gould, No. 13	519	do	953	77	434	1,066	970	1,030	300 Gas, 960 feet
5 Ohio	T. Gould, No. 9	517	do	989	35	472	1,028	1,000	1,024	100 Gas, 995 feet
6 Ohio	T. Gould, No. 12	516	do	969	61	453	1,047	995	1,030	120 Gas, 995 feet
7 Ohio	T. Gould, No. 19	519	Kirkwood	975 1,585	26	456	1,044	1,587	1,611	Salt water, 1,033 feet. 200 Gas, 1,586 feet. Quit in sand.
8 Ohio	T. Gould, No. 6	519	Bridgeport	992	31	473	1,027	997	1,023	200
9 Ohio	T. Gould, No. 5	514	do	975	35	461	1,039	978	1,010	200
10 Ohio	T. Gould, No. 18	514	Buchanan	975	125	461	1,039			Salt water, 1,030 feet.
			Kirkwood	1,300 1,579	120 86	786 1,065	714	1,584	1,605	Salt water, 1,310 feet. 225 Gas, 1,583 feet. Quit in sand.
11 Ohio	T. Gould, No. 11	513	Bridgeport	955	40	442	1,058	980	995	75 Gas, 965 feet.
12 Ohio	T. Gould, No. 2	507	do	963	38	456	1,044	974	1,001	200 Gas, 965 feet.
13 Ohio	T. Gould, No. 17	504	Buchanan	965	135	461	1,039			Salt water, 1,030 feet.
14 Ohio	T. Gould, No. 4	500	Kirkwood	1,300	110	796	704			Salt water, 1,300 feet.
15 Ohio	T. Gould, No. 10	506	Bridgeport	1,562	24	459	1,041	1,572	1,587	175 Gas, 1,570 feet.
16 Ohio	T. Gould, No. 15	492	do	980	30	488	1,012	979	1,015	200 Gas, 965 feet.
17 Ohio	T. Gould, No. 3	492	Kirkwood	1,533	29	461	1,031	1,551	1,582	200 Gas, 1,557 feet.
18 Ohio	W. Gould, No. 1	487	Bridgeport	980	40	468	1,032	960	1,000	250
19 Ohio	W. Gould, No. 5	488	do	965	25	479	1,021	970	985	200
			Kirkwood	1,544	37	458	1,042	1,556	1,574	150 Gas, 1,558 feet. Quit in sand.
20 Ohio	W. Gould, No. 4	488	Bridgeport	942	37	454	1,046	952	979	200 Gas, 952 feet.
			Shallow	585	95	89	1,411			Gas, 600 feet. 2,000,000 cubic feet daily.
1 Central Refining Co.	Jenner, No. 1	493	Bridgeport	925	15	429	1,071			
			do	955	37	459	1,041			
2 Central Refining Co.	Jenner, No. 14	496	do	955	37	459	1,041			
3 Central Refining Co.	Jenner, No. 3	483	Kirkwood	1,589	26	473	1,582	1,606	1,606	150
			Bridgeport	931	59	448	1,052	941	996	Gas, 936 feet.
			do	940	59	444	1,055	950		
4 Central Refining Co.	Jenner, No. 16	496	Buchanan	1,330	35	834	666			
			Kirkwood	1,577	32	481	1,419	1,577	1,618	
5 Central Refining Co.	Jenner, No. 4	498	Bridgeport	902	95	404	1,096	940	997	Gas, 905 feet.
			do	920	10	420	1,080	920	998	
6 Central Refining Co.	Jenner, No. 8	500	do	960	38	460	1,040			
7 Central Refining Co.	Jenner, No. 10	500	Kirkwood	1,933	45	493	1,037	1,605	1,638	
			Bridgeport	935	25	448	1,052	948		Gas, 939 feet.
8 Central Refining Co.	Jenner, No. 7	487	do	972	22	485	1,015	1,000		
9 Central Refining Co.	Jenner, No. 9	487	Kirkwood	1,571	39	484	1,416	1,582	1,610	
10 Central Refining Co.	Jenner, No. 15	481	Bridgeport	935	48	454	1,046	938		40
11 Central Refining Co.	Jenner, No. 6	482	do	925	70	443	1,057			Gas, 932 feet.
12 Central Refining Co.	Jenner, No. 12	482	Kirkwood	1,551	46	469	1,431	1,555	51,597	935
13 Central Refining Co.	Jenner, No. 5	484	Bridgeport	929	78	445	1,055	939	997	65
14 Central Refining Co.	Jenner, No. 11	484	Kirkwood	1,567	28	483	1,417			Gas, 935 feet.
15 Central Refining Co.	Jenner, No. 13	482	do	1,519	37	467	1,433	1,556	1,600	Well abandoned.

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
35— S. E....	16	Central Refining Co.	Jenner, No. 2	482 {	932	8	450	1,050	.....	.....	.....	.....
	17	Central Refining Co.	A. Gould, No. 2.	470 {	945	37	463	1,037	.....	.....	.....	Salt water, 1,008 feet.
	18	Central Refining Co.	A. Gould, No. 10.	463 {	991	21	509	991	.....	.....	200	Gas, 925 feet.
	19	Central Refining Co.	A. Gould, No. 12.	464 {	920	42	450	1,050	930	962	.....	.....
20	Central Refining Co.	A. Gould, No. 11.	464 {	915	54	451	1,049	923	966	.....	.....	Gas, 915 feet.
21	Central Refining Co.	A. Gould, No. 8.	465 {	928	39	463	1,037	951	967	.....	.....	Gas, 928 feet.
22	Central Refining Co.	L. Leighty, No. 3.	475 {	938	24	463	1,037	944	962	.....	.....	Gas, 938 feet.
23	Ohio.	L. Leighty, No. 3.	475 {	937	28	462	1,038	.....	.....	.....	.....	.....
24	Ohio.	L. Leighty, No. 15.	475 {	1,540	31	1,065	435	1,550	1,571	.....	.....	Gas, 1,545 feet.
25	Ohio.	L. Leighty, No. 9.	474 {	928	55	454	1,046	940	983	.....	.....	Gas, 938 feet.
26	Ohio.	L. Leighty, No. 4.	490 {	947	27	457	1,043	948	974	.....	.....	Gas, 947 feet.
27	Ohio.	L. Leighty, No. 14.	490 {	930	35	440	1,060	.....	.....	.....	.....	.....
28	Ohio.	L. Leighty, No. 6.	473 {	1,554	28	1,064	436	1,562	1,582	.....	.....	Gas, 1,560 feet.
29	Ohio.	L. Leighty, No. 16.	473 {	917	63	444	1,056	935	980	.....	.....	Gas, 917 feet.
30	Ohio.	A. Gould, No. 3.	486 {	1,210	190	737	763	.....	.....	.....	.....	Salt water, 1,300 feet.
31	Ohio.	A. Gould, No. 9.	486 {	1,548	12	1,073	427	1,552	1,567	.....	.....	Gas, 1,554 feet.
32	Ohio.	A. Gould, No. 4.	508 {	940	16	454	1,046	945	962	.....	.....	Gas, 942 feet.
33	Ohio.	A. Gould, No. 8.	508 {	948	38	462	1,038	.....	.....	.....	.....	.....
34	Ohio.	A. Gould, No. 1.	505 {	1,559	39	1,073	427	1,580	1,598	.....	.....	Gas, 1,575 feet.
												sand.
					940	25	432	1,068	.....	.....	.....	Gas, 1,590 feet.
					1,587	30	1,079	421	1,597	.....	.....	Well abandoned.
					940	30	432	1,068	.....	.....	.....	.....
					1,585	28	1,077	423	1,590	1,613	.....	Gas, 1,587 feet.
					960	43	455	1,045	970	1,003	.....	Well abandoned.

35	Ohio.....	A. Gould, No. 6.....	506	do.....	940	35	434	1,066	1,605	1,627	175	
36	Ohio.....	A. Gould, No. 7.....	488	Kirkwood.....	1,590	37	1,084	416	1,023			
				Bridgeport.....	965	33	477	1,023				
				Kirkwood.....	1,572	35	1,084	416	1,534	1,633	75	Gas, 1,597 feet, Salt water, 1,608 feet.....
1	Busch-Everett.....	L. Leighty, No. 1.....	487	do.....								No record.
2	Ohio.....	T. Leighty, No. 8.....	494	Bridgeport.....	950	40	456	1,044				Salt water
				Buchanan.....	1,300	108	806	694				do.
				Kirkwood.....	1,587	23	1,093	407				
				Tracey.....	1,712	13	1,218	282				
				McClosky.....	1,827	3	1,333	167	1,827		110	Gas, 1,826 feet.....
3	Ohio.....	T. Leighty, No. 6.....	492	Kirkwood.....	1,592	43	1,100	400				
				Tracey.....	1,708	20	1,216	284				
				McClosky.....	1,797	38	1,305	195	1,802	1,835	715	Gas, 1,800 feet.
				Bridgeport.....	945	105	461	1,039	950		Show	Salt water
4	Ohio.....	T. Leighty, No. 7.....	484	Buchanan.....	1,320	80	836	664				
				Kirkwood.....	1,580	43	1,102	398	1,590			Gas, 1,588 feet
				Tracey.....	1,708	62	1,224	276	1,715			Gas, 1,711 feet.
				McClosky.....	1,827	6	1,343	157	1,830	1,833	100	Gas, 1,828 feet.
5	Gee.....	Gee, No. 7.....	479	Kirkwood.....	1,588	62	1,109	391				
				McClosky.....	1,814	10	1,335	165		1,824		
6	Gee.....	Gee, No. 8.....	461	Kirkwood-1.....	1,572	18	1,111	389				
7	Gee.....	Gee, No. 6.....	467	Kirkwood-2.....	1,594	21	1,133	367		1,637		
8	Ohio.....	T. Leighty, No. 5.....	462	Kirkwood-3.....	1,621	16	1,100	340	1,580	1,637	60	
				do.....	1,577	59	1,110	390	1,565	1,584	75	Gas, 1,560 feet.
9	Gee.....	Dining, No. 7.....	467	Kirkwood-1.....	1,558	25	1,096	404				
				Kirkwood-2.....	1,621	53	1,098	402		1,639	30	
10	Gee.....	Dining, No. 3.....	464	Kirkwood-1.....	1,576	18	1,154	346	1,576		100	
11	Ohio.....	T. Leighty, No. 4.....	454	Kirkwood-2.....	1,603	14	1,139	361	1,603	1,629		
				Bridgeport.....	1,544	29	1,090	410	1,550	1,574	300	Gas, 1,549 feet.
12	Ohio.....	T. Leighty, No. 9.....	446	Buchanan.....	1,250	70	474	1,026				
				Kirkwood.....	1,550	50	804	696				
				McClosky.....	1,782	35	1,104	396				
13	Ohio.....	T. Leighty, No. 2.....	446	Kirkwood.....	1,555	25	1,336	164	1,783	1,787	450	Gas, 1,782 feet.
14	Ohio.....	T. Leighty, No. 3.....	445	do.....	1,540	28	1,109	391	1,558	1,580	15	Gas, 1,558 feet.
				Bridgeport.....	935	210	490	1,010	1,548	1,568	50	Gas, 1,542 feet.
15	Ohio.....	T. Leighty, No. 10.....	445	Buchanan.....	1,300	60	855	645				
				Kirkwood.....	1,545	40	1,100	400				
				Tracey.....	1,665	10	1,220	280				
				McClosky.....	1,797	4	1,352	148	1,797	1,820	50	Gas, 1,797 feet.
16	Ohio.....	T. Leighty, No. 1.....	509	Shallow.....	660	13	151	349				Salt water
				Bridgeport.....	830	23	341	159				
				do.....	942	13	433	1,067	942			
				do.....	1,000	212	441	1,009				Salt water, 1,025 feet.
1	Ohio.....	Withers, No. 1.....	508	Kirkwood.....	1,614	26	1,105	395	1,615	1,648		
2	Ohio.....	Withers, No. 3.....	472	do.....	1,617	33	1,109	391	1,620	1,650	100	Gas, 1,620 feet.
3	Ohio.....	Ryan, No. 7.....	469	do.....	1,572	28	1,100	400	1,583	1,601	100	Gas, 1,582 feet.
				Bridgeport.....	941		472	1,028	946	978		

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Initial product—barrels.	Remarks.			
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			Oil depth—feet.	Total depth—feet.	
N. W.	4	Ohio.....	Ryan, No. 10.....	469 {	Bridgeport.....	940	60	471	1, 029	1, 575	1, 600	90	Gas, 1,574 feet.	
					Kirkwood.....	1, 569	31	1, 100	997					
					Bridgeport.....	1, 975	15	503	997					
					Buchanan.....	1, 275	100	803	697					
	5	Ohio.....	Ryan, No. 15.....	472 {	Kirkwood.....	1, 568	23	1, 096	404	1, 575			Gas, 1,570 feet.	
					Tracey.....	1, 676	22	1, 204	296	1, 688			Gas, 1,680 feet.	
					McClosky.....	1, 788	5	1, 316	184	1, 788	1, 793		1, 650	Gas, 1,788 feet. Flowing well.
	6	Ohio.....	Ryan, No. 9.....	467 {	Bridgeport.....	944	31	477	1, 023	960	976	15	(Account 2)	
					do.....	929	36	465	1, 035	939	963	27	(Account 2)	
					Kirkwood.....	1, 560	32	1, 097	403	1, 565	1, 593	100	Gas, 1,563 feet (account 2)	
					Bridgeport.....	980	70	515	985					
9	Ohio.....	Withers, No. 4.....	465 {	Kirkwood.....	1, 569	24	1, 104	396	1, 572	1, 600	90	Gas, 1,571 feet.		
				do.....	1, 543	32	1, 097	403	1, 545	1, 575	75	Gas, 1,544 feet.		
													Drilling.	
				Kirkwood.....	1, 539	29	1, 077	423	1, 549	1, 569	35	Gas, 1,548 feet. Drilling.		
S. W.	3	Donnell, Agent.....	C. Buchman, No. 3.....	441 {	Bridgeport.....	960	28	519	981	1, 560	1, 568	125		
					Kirkwood.....	1, 540	28	1, 099	401	1, 540	1, 562	120		
					do.....	1, 535	27	1, 094	406	1, 545	1, 560	240		
					do.....	1, 533	27	1, 094	406	1, 536	1, 560	240		
	5	Donnell, Agent.....	C. Buchman, No. 6.....	439 {	do.....	1, 535	28	1, 096	404	1, 540	1, 563			
					do.....	1, 535	28	1, 096	404	1, 540	1, 563			
					do.....	1, 535	28	1, 096	404	1, 540	1, 563			
					do.....	1, 535	28	1, 096	404	1, 540	1, 563			
	7	Donnell, Agent.....	C. Buchman, No. 10.....	440 {	Kirkwood.....	1, 536	24	1, 097	403	1, 536	1, 560	130	Drilling.	
					do.....	928	43	1, 105	395	1, 561	1, 601	130	Show	
					Bridgeport.....	1, 545	43	1, 105	395	1, 561	1, 601	130	Salt water, 1,015 feet.	
					Kirkwood.....	1, 534	63	1, 093	407	1, 584	1, 597	105		
10	Central Refining Co.....	Jenner, No. 2.....	441 {	do.....	1, 545	39	1, 100	400	1, 551	1, 651	105			
				do.....	1, 545	39	1, 100	400	1, 551	1, 651	105			
				do.....	1, 545	39	1, 100	400	1, 551	1, 651	105			
				do.....	1, 545	39	1, 100	400	1, 551	1, 651	105			
11	Central Refining Co.....	Jenner, No. 12.....	445 {	Bridgeport.....	1, 559	36	1, 099	401	1, 565	1, 689	130			
				Kirkwood.....	1, 559	36	1, 099	401	1, 565	1, 689	130			
				Tracey.....	1, 638	34	1, 178	322	1, 647	1, 689	130			
				Tracey.....	1, 638	34	1, 178	322	1, 647	1, 689	130			
12	Central Refining Co.....	Jenner, No. 11.....	460 {	Bridgeport.....	1, 559	36	1, 099	401	1, 565	1, 689	130			
				Kirkwood.....	1, 559	36	1, 099	401	1, 565	1, 689	130			
				Tracey.....	1, 638	34	1, 178	322	1, 647	1, 689	130			
				Tracey.....	1, 638	34	1, 178	322	1, 647	1, 689	130			

13	Ohio.....	J. Gould (Acct. 1) No. 3.....	464	Kirkwood	1,568	191	1,191	396	1,658	1,702	250	Gas, 1,656 feet.
14	Ohio.....	J. Gould (Acct. 1) No. 2.....	474	Kirkwood	1,579	35	1,209	1,055	1,395	1,585	120	Gas, 1,580 feet.
1	Central Refining Co.....	Jenner, No. 1.....	439	Bridgeport.	1,920	27	1,481	1,019	1,395	1,598	Show	
				Kirkwood	1,544	53	1,105	395	1,546	1,610		
2	Central Refining Co.....	Jenner, No. 13.....	439	Bridgeport.	1,925	45	1,486	1,014	1,546	1,610	10	Gas, 935 feet. Well abandoned.
3	Central Refining Co.....	Jenner, No. 5.....	442	Kirkwood.	1,841	54	1,402	398	1,546	1,610		
				do.	929	68	487	1,013	939			
4	Central Refining Co.....	Jenner, No. 8.....	442	Kirkwood-1	935	493	1,007	940				
				Kirkwood-2	1,535	5	1,093	407				
				Kirkwood-3	1,557	4	1,115	385				
5	Central Refining Co.....	Jenner, No. 3.....	440	Kirkwood-1	1,600	37	1,158	342				Gas, 1,550 feet.
6	Central Refining Co.....	Jenner, No. 14.....	438	Kirkwood-2	1,534	36	1,094	406	1,540			
				Kirkwood	1,576	14	1,136	364	1,597			
7	Gee.....	Dining, No. 8.....	437	Kirkwood-1	1,539	27	1,101	399	1,539	1,580	75	
				Kirkwood-2	1,543	24	1,106	394	1,580			
				Bridgeport.	1,597	18	1,160	340	1,615			
8	Gee.....	Dining, No. 10.....	440	Bridgeport.	998	17	558	942	1,015			
9	Gee.....	Dining, No. 9.....	451	Kirkwood-1	1,555	20	1,114	386	1,628		10	
				Kirkwood-2	1,608	14	1,157	343	1,628		100	
10	Gee.....	Dining, No. 6.....	446	Kirkwood-1	1,554	30	1,168	392	1,626			
				Kirkwood-2	1,614	12	1,168	332	1,626			
11	Gee.....	Dining, No. 5.....	446	Kirkwood-1	1,555	42	1,109	391	1,629			Quitin sand.
12	Ohio.....	Irwin, No. 4.....	438	Kirkwood-2	1,614	15	1,168	332	1,545	1,564	225	Gas, 1,542 feet.
13	Ohio.....	Irwin, No. 5.....	439	Kirkwood	1,535	29	1,097	403	1,526	1,560	207	Gas, 1,526 feet.
14	Ohio.....	Irwin, No. 2.....	441	do.	1,525	25	1,086	414	1,548	1,560	90	Gas, 1,545 feet.
15	Ohio.....	Irwin, No. 1.....	443	Bridgeport.	1,537	23	1,096	404	1,548	1,560		
				Kirkwood	930	200	487	1,013	1,579		52	
16	Ohio.....	Irwin, No. 3.....	446	do.	1,550	29	1,107	393	1,551	1,577	204	Gas, 1,550 feet.
				Bridgeport.	1,547	30	1,101	399	1,553	1,577		
17	Gee.....	Gee, No. 2.....	440	Kirkwood-1	943	503	997	945			90	
				Kirkwood-2	1,537	34	1,097	403	1,537			
				Tracey.	1,581	26	1,141	359				
				McClusky	1,630	15	1,190	310				
18	Gee.....	Gee, No. 5.....	441	Kirkwood	1,767	28	1,327	173	1,795	951	8	Salt water under the oil.
				Bridgeport.	935	16	494	406	935	951	35	
19	Gee.....	Gee, No. 1.....	443	Tracey-1	1,539	56	1,096	404	1,547			
				Tracey-2	1,657	17	1,214	286				
				McClusky	1,720	12	1,277	223				
20	Gee.....	Gee, No. 4.....	483	Bridgeport.	1,789	17	1,346	154	1,789	1,806		
				do.	895	10	412	1,088	895			
				do.	922	439	1,061	936	953	50		
21	Gee.....	Gee, No. 3.....	452	Kirkwood	940	488	1,012	950				
				Bridgeport.	1,551	29	1,099	401	1,558	1,580	360	
22	Gee.....	Dining, No. 2.....	452	Kirkwood-1	916	19	464	917	1,036	917		
				Kirkwood-2	1,560	36	1,108	392	1,563			
				Kirkwood	1,601	11	1,149	351	1,601	1,612	100	
23	Gee.....	Dining, No. 1.....	458	Bridgeport.	985	527	973					
				Kirkwood	1,556	89	1,098	402				
				Tracey	1,655	12	1,197	303	1,667			

Lawrence County—Dennison Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36—													
S. E....	24	Gee.....	Dining, No. 4.....	464 {	Kirkwood-1..... Kirkwood-2..... Kirkwood-3.....	1,565 1,603 1,620	32 12 8	1,101 1,139 1,156	399 361 344	1,566 1,605 1,621	1,629	100	Salt water, 1,582 feet.....

Lawrence County—Lawrence Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1—													
N. W..	1	Donnel, Agent.....	E. Martin, No. 1.....	445 {	Kirkwood..... McClosky.....	1,597 1,882	11 8	1,152 1,437	348 63	1,882 1,570	2,000 1,628	Dry	Salt water, 1,882 feet.....
S. W..	1	Gillespie.....	Stanfield, No. 2.....	439 {	Kirkwood.....	1,564	64	1,125	375	1,570	1,628		Salt water
	2	Ohio.....	R. Kirkwood, No. 2.....	440 {	Bridgeport.....	1,000	100	560	940				
	3	Gillespie.....	Stanfield, No. 4.....	440 {	Kirkwood.....	1,565	35	1,125	375		1,610	Dry	Drilling

4	Gillespie	Stanfield, No. 1.	442	Bridgeport.	1,020	20	578	922				Salt water.
				Buchanan.	1,300	54	858	642				
				Kirkwood.	1,565	45	1,123	377	1,581	1,610	190	Gravily, 38° B.
5	Gillespie	Stanfield, No. 3.	448	Bridgeport.	1,015	135	567	933				
					1,975	55	1,527	—27	2,560		Dry	Salt water, 2,450 feet.
6	Ohio	R. Kirkwood, No. 1.	440	Bridgeport.	910	220	470	1,030				
				Kirkwood.	1,568	36	1,128	372				
				Tracey.	1,776	34	1,336	164				
				McClosky	1,887	13	1,447	53	2,002		Dry	
7	Ohio	A. Kirkwood, No. 2.	445	Kirkwood.	1,568	42	1,123	377	1,582	1,651	55	Drilling
8	Ohio	A. Kirkwood, No. 1.	445	Bridgeport.	1,010	105	570	930				Gas, 1,582 feet.
9	Ohio	M. Kirkwood, No. 1.	440	Stray	1,480	60	990	510				
				Kirkwood.	1,563	57	1,123	377	1,628		Dry	Salt water, 1,607 feet.
1	Ohio	Hennesse, No. 1.	450	Bridgeport.	1,000	140	550	950				
				Stray	1,480	70	1,010	490				Salt water, 1,480 feet.
				Kirkwood.	1,620	20	1,170	330	1,625	1,981	12	Gas, 1,695 feet.
1	Ohio	Sumner, No. 2.	434	Bridgeport.	1,000	120	566	934				
				Buchanan.	1,340	18	906	594	1,340		25	Gas, 1,344 feet.
				Kirkwood.	1,600	5	1,166	334				
				Tracey.	1,690	6	1,256	244	1,696			
2	Ohio	Sumner, No. 1.	438	Bridgeport.	960	140	522	978				
				Buchanan.	1,380	50	942	558				
				Kirkwood.	1,577	26	1,139	361	1,582	1,821	150	Gas, 1,582 feet.
3	Ohio	Tanquary, No. 1.	430	Bridgeport.	950	180	520	980				
				Buchanan.	1,375	30	945	555				
				Kirkwood 1.	1,575	20	1,145	355	1,595		12	Salt water.
				Kirkwood-2.	1,610	17	1,180	320	1,627			Drilling.
4	Snowden Bros.	Whittaker, No. 6.	446									
1	Ohio	McCleve, No. 1.	492	Bridgeport.	1,018	10	526	974				
				Stray	1,124	68	632	868	1,927	2,164	Show	Salt water, 2,164 feet.
					1,927		1,455	65				Abandoned.
1	Illinois Development & Producing Co.	T. Whittaker, No. 1.	449	Kirkwood.	1,590	32	1,141	359			175	No record.
2	Linden.	T. Whittaker, No. 1.	462									
1	Silurian	Hardaere, No. 1.	437	Bridgeport.	850	110	413	1,087			Show	Salt water, 950 feet.
				Buchanan.	1,380	20	943	557				Salt water, 1,385 feet.
				Kirkwood.	1,600	3	1,163	337				
				McClosky.	1,870	30	1,433	67	1,880	1,994	Dry	
				do.	840	25	395	1,105				
				do.	940	100	495	1,005				Salt water, 955 feet and 1,005 feet.
1	Bridgeport.	Stoltz, No. 1.	445	Stray	1,100	40	655	845				Salt water, 1,100 feet.
				do.	1,455	20	1,010	490				Salt water, 1,270 feet.
2	Ohio	Poor Farm, No. 2.	448	Kirkwood.	1,519	23	1,074	426	1,550	1,602		Well abandoned.
3	Ohio	Poor Farm, No. 1.	452	do.	1,508	23	1,060	440	1,510	1,531	125	
				Bridgeport.	909	46	457	1,043				
				Kirkwood.	1,440	45	988	512	1,450	1,485	240	

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
4— N. W..	4	Ohio.....	Poor Farm, No. 3.....	452	Bridgeport.....	898	17	446	1,054	900	915	160	
	5	Ohio.....	Poor Farm, No. 4.....	468	do.....	898	37	430	1,070	907	935	180	
	6	Ohio.....	Poor Farm, No. 5.....	470	do.....	903	58	433	1,067	918	961	200	
	7	Ohio.....	Poor Farm, No. 7.....	486	do.....	900	57	414	1,086	933	957	80	
	8	Ohio.....	Poor Farm, No. 6.....	499	do.....	926	38	427	1,073	926	964	125	
	9	Ohio.....	Poor Farm, No. 9.....	492	do.....	943	27	451	1,049	955	973	30	
	10	Ohio.....	Poor Farm, No. 8.....	492	Kirkwood.....	950	31	458	1,042	1,551	1,566	45	Gas, 1,522 feet. Salt water, 1,564 feet.
	11	Bridgeport.....	Stoltz, No. 2.....	466	Bridgeport.....	935	55	469	1,031				
	1	Ohio.....	Moore, No. 1.....	503	Kirkwood.....	1,300	40	834	666				Gas, 1,550 feet.
	2	Ohio.....	Moore, No. 2.....	502	Bridgeport.....	1,531	29	1,065	435	1,533	1,560		
S. W..	3	Ohio.....	Moore, No. 6.....	483	do.....	940	30	437	1,083		975		
	4	Ohio.....	Moore, No. 5.....	487	Kirkwood-1.....	935	40	433	1,087				
	5	Ohio.....	Moore, No. 9.....	477	Kirkwood-2.....	1,518	27	1,035	465	1,540			
	6	Ohio.....	W. Cooper, No. 5.....	480	Bridgeport.....	1,590	13	1,107	393	1,590	1,618	40	
	7	Ohio.....	Moore, No. 10.....	475	Bridgeport.....	935	30	448	1,032	1,538	1,596	50	
	8	Ohio.....	Moore, No. 3.....	497	Kirkwood.....	1,518	27	1,041	451				
	9	Ohio.....	Moore, No. 4.....	488	Kirkwood-1.....	1,529	10	1,049	451				
	10	Ohio.....	W. Cooper, No. 1.....	460	Kirkwood-2.....	1,542	12	1,062	438	1,546	1,559		
	11	Ohio.....	W. Cooper, No. 2.....	478	Kirkwood-1.....	1,514	6	1,039	461				
	12	Ohio.....	W. Cooper, No. 4.....	484	Kirkwood-2.....	1,523	27	1,048	452	1,523	1,554	30	
	13	Ohio.....	W. Cooper, No. 3.....	486	Bridgeport.....	928	32	431	1,099				
	14	Ohio.....	Moore, No. 7.....	485	Kirkwood-1.....	1,517	20	1,049	451				
	15	Ohio.....	Moore, No. 8.....	488	Kirkwood-2.....	1,535	20	1,067	433				
					Kirkwood.....	1,528	12	1,068	432		1,570		
					do.....	1,607	17	1,129	371	1,610	1,624	200	
					do.....	1,603	21	1,119	381	1,606	1,625	100	
					do.....	1,568	22	1,082	418	1,572	1,606	100	
					do.....	1,550	17	1,065	435	1,552	1,598	110	
					Kirkwood-1.....	1,519	12	1,031	469	1,519			
					Kirkwood-2.....	1,539	13	1,539	449	1,539	1,593	35	

S. E...	1 Ohio...	Lamott, No. 1	477	Kirkwood	1,616	19	1,139	361	1,616	1,639	70
9—	2 Ohio...	S. N. Cooper, No. 1	468	do.	1,606	4	1,138	362	1,802	1,802	Dry
N. E...	1 Ohio...	Propes, No. 2	467	Kirkwood	1,598	22	1,134	366	1,608	1,833	Dry
	2 Ohio...	Propes, No. 1	464	do.	1,608	7	1,141	359	1,632	90 Gas, 1,608 feet.	
	3 Ohio...	J. Griggs, No. 2	467	Bridgeport	890	8	1,059	1,059	1,792	Dry Salt water, 1,640 feet.	
	4 Ohio...	J. Griggs, No. 1	449	Kirkwood	1,455	45	1,005	494	1,636	Abandoned	
S. E...	1 Ohio...	Stivers, No. 1	433	Bridgeport	950	517	983	983	1,636	Abandoned	
				Buchanan	1,325	892	608	608	1,598		
				Kirkwood	1,564	1,131	389	144	2,007	75	
				McClosky	1,790	6	1,356	144	2,007	Gas, 1,790 feet.	
2 Ohio...	2 Ohio...	Stivers, No. 2	434	McClosky	1,966	6	1,532	32	2,007	Salt water, 1,980 feet.	
3 Ohio...	3 Ohio...	Umfleet, No. 1	434	Buchanan	1,250	15	816	684	1,614	60	
				Kirkwood	1,558	45	1,124	376	1,560	Gas, 1,563 feet.	
10—	1 Shaw...	Hardacre, No. 4	445	Bridgeport	745	250	270	1,230	1,563	Drilling	
N. E...	2 Ohio...	Hardacre, No. 1	475	Kirkwood-1	1,545	30	1,070	430	1,563	Show	
				Kirkwood-2	1,605	30	1,130	370	1,563	Salt water, 1,575 feet.	
				Tracey	1,685	70	1,210	290	1,772	Show	
	3 Shaw...	Hardacre, No. 3	424	Kirkwood	1,525	53	1,101	399	1,772	Dry Salt water, 1,735 feet.	
	4 Shaw...	Hardacre, No. 1	421	Kirkwood	1,530	48	1,109	391	1,772	No record	
	5 Shaw...	Hardacre, No. 2	421	Bridgeport	1,050	50	628	872	1,563	60	
	6 Ohio...	J. Seed, No. 5	422	Stray	1,415	20	993	607	1,540	80	
				Kirkwood	1,517	13	1,095	405	1,540	Gas, 1,517 feet.	
				Bridgeport	960	373	538	962	1,540		
				Stray	1,375	65	953	547	1,558	170	
	7 Ohio...	J. Seed, No. 6	422	Kirkwood	1,519	58	1,097	403	1,519	Gas, 1,519 feet.	
N. W...	1 Ohio...	T. Seed, No. 1	434	Buchanan	1,310	85	876	624	1,558	No record	
S. W...	1 Ohio...	McCormick, No. 1	434	Tracey	1,605	28	1,171	329	1,578	50	
				Kirkwood	1,577	29	1,143	357	1,577	Gas, 1,578 feet.	
	2 Ohio...	Griggs, No. 7	434	Kirkwood-1	1,490	28	1,054	446	1,615	Gas, 1,578 feet. Salt water, 1,603 feet.	
	3 Ohio...	Lawson, No. 2	436	Kirkwood-2	1,540	70	1,104	396	1,990	22	
	4 Ohio...	Lawson, No. 1	437	Kirkwood	1,534	41	1,098	402	1,534	13	
S. E...	1 Ohio...	J. Seed, No. 3	436	Tracey	1,635	12	1,199	301	1,660	No record	
				Kirkwood-1	1,515	15	1,080	420	1,515	50	
	2 Ohio...	J. Seed, No. 4	435	Kirkwood-2	1,545	20	1,110	390	1,550	Gas, 1,515 feet.	
	3 Ohio...	J. Seed, No. 2	433	Kirkwood	1,521	43	1,088	412	1,520	40	
	4 Ohio...	J. Seed, No. 7	436	Tracey	1,616	19	1,183	317	1,639	70	
	5 Ohio...	J. Seed, No. 1	437	Kirkwood	1,506	12	1,069	431	2,007	Drilling	
				McClosky	1,711	2	1,274	226	2,007	Salt water, 1,550 feet.	
N. E...	1 Ohio...	E. Kirkwood, No. 1	445	Bridgeport	1,005	125	560	940	1,602	Salt water, 1,010 feet.	
				Stray	1,460	60	1,015	455	1,580	Salt water, 1,475 feet.	
	2 Ohio...	M. Kirkwood, No. 4	439	Kirkwood	1,568	34	1,123	377	1,602	175	
										Gas, 1,580 feet.	
										No record	

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
11— N. E...	3	Ohio	M. Kirkwood, No. 3.	441	Bridgeport.....	985	95	544	956	.....	.....	.....	Salt water.....
					Stray.....	1,440	60	999	501	.....	.....	.....	.....
					Kirkwood.....	1,547	53	1,106	394	.....	1,594	140	Salt water.....
					Bridgeport.....	815	25	369	1,131	.....	.....	.....	do.....
N. W..	4	Ohio	M. Kirkwood, No. 2.	446	do.....	1,000	115	554	946	.....	.....	.....	.....
					Bridgeport and Buchanan.....	1,147	273	701	799	.....	.....	.....	.....
					Kirkwood.....	1,579	26	1,133	367	.....	1,579	100	Gas, 1,579 feet.....
					Bridgeport.....	1,000	150	552	948	.....	.....	.....	Salt water.....
S. W..	5	Ohio	M. Kirkwood, No. 1.	448	Stray.....	1,480	40	1,032	408	.....	.....	.....	do.....
					Kirkwood.....	1,566	33	1,118	382	.....	1,602	175	.....
					Bridgeport.....	1,985	139	551	949	.....	.....	.....	.....
					Buchanan.....	1,370	110	936	564	.....	.....	.....	.....
S. W..	1	Ohio	M. Kirkwood, No. 5.	434	Kirkwood.....	1,543	44	1,109	391	.....	1,866	100	Gas, 1,570 feet.....
					Whittaker, No. 5.....	.....	.....	.....	.....	.....	.....	.....	No record.....
					Whittaker, No. 2.....	.....	.....	.....	.....	.....	.....	.....	do.....
					Whittaker, No. 3.....	.....	.....	.....	.....	.....	.....	.....	do.....
S. W..	2	Snowden Bros.	Whittaker, No. 1.	440	Whittaker, No. 4.....	.....	.....	.....	.....	.....	.....	.....	do.....
					Bridgeport.....	730	30	290	1,210	.....	.....	.....	Salt water, 810 feet.....
					do.....	785	40	345	1,155	.....	.....	.....	Hole full of water, 996 feet.....
					do.....	996	29	556	994	.....	.....	.....	.....
S. W..	3	Ohio	Christerson, No. 11.	443	Buchanan.....	1,345	30	905	595	.....	.....	.....	.....
					Kirkwood.....	1,525	35	1,085	415	.....	1,704	.....	Gas, 1,745 feet.....
					Stray.....	1,700	.....	1,260	240	.....	.....	.....	Drilling.....
					Buchanan.....	1,320	72	887	613	.....	1,320	5	.....
S. W..	4	Ohio	Christerson, No. 4.	433	Kirkwood.....	1,513	54	1,080	420	.....	.....	2	.....
					Tracey.....	1,621	15	1,188	312	.....	1,648	90	Well abandoned.....

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
12—	4	Bridgeport.	Henry, No. 1	440	Bridgeport.....	905	15	465	1,035	.....	.....	Salt water, 910 feet.....
					do.....	980	85	540	990	.....	.....	Salt water, 1,000 feet.....
S. W..	4	Bridgeport.	Henry, No. 1	440	Buchanan-1.....	1,300	16	860	640	.....	.....	Salt water, 1,300 feet.....
					Buchanan-2.....	1,322	8	882	618	.....	.....	.....
					Kirkwood-1.....	1,549	31	1,109	391	1,556	.....	.....
					Kirkwood-2.....	1,590	5	1,150	330	1,590	Show	.....
					Kirkwood-3.....	1,900	10	1,160	340	1,600	.....	.....
					McClosky.....	1,787	4	1,347	133	.....	Dry	.....
					Stray.....	1,883	5	1,443	57	1,889	.....	.....
					Bridgeport.....	860	30	430	1,070	.....	.....	Drilling
					do.....	960	90	530	970	.....	.....	Hole full of water, 975 feet
					Stray.....	1,174	6	774	756	.....	.....	Salt water
	6	Bridgeport.	Henry, No. 2	430	Buchanan.....	1,325	55	895	605	.....	.....	.....
					Kirkwood.....	1,563	21	1,133	367	1,600	.....	.....
					Bridgeport.....	790	15	365	1,135	.....	.....	.....
					do.....	870	10	445	1,055	.....	.....	.....
					do.....	955	45	530	970	.....	.....	.....
					do.....	1,002	63	577	923	.....	.....	.....
					Stray.....	1,180	8	755	745	.....	.....	.....
					Buchanan.....	1,330	20	905	595	.....	.....	.....
					Kirkwood-1.....	1,527	19	1,102	398	.....	Show	.....
					Kirkwood-2.....	1,558	17	1,133	367	1,558	.....	Salt water, 1,563 feet.....
	7	Bridgeport.	McPherson, No. 4	425	McClosky.....	1,771	4	1,346	154	1,986	.....	.....
					Bridgeport.....	931	.....	995	.....	.....	.....	.....
					Buchanan.....	1,300	.....	870	620	.....	.....	.....
					Kirkwood.....	1,537	43	1,107	393	1,560	.....	50 Gas, 1,560 feet.....
					McClosky.....	1,770	6	1,340	160	1,900	Show	Dry well.....
					Kirkwood.....	1,550	70	1,105	395	1,900	.....	.....
					McClosky.....	1,793	.....	1,350	150	1,793	Dry	Lime, 1,750 to 2,005 feet..
					McClosky.....	1,793	.....	1,350	150	1,793	.....	.....
					McClosky.....	1,793	.....	1,350	150	1,793	.....	.....
					McClosky.....	1,793	.....	1,350	150	1,793	.....	.....
	8	Donnel, Agent.	J. Seed, No. 3	430	Bridgeport.....	1,300	.....	870	620	.....	.....	.....
					Kirkwood.....	1,537	43	1,107	393	1,560	.....	50 Gas, 1,560 feet.....
	9	Donnel, Agent.	J. Seed, No. 1	445	McClosky.....	1,770	6	1,340	160	1,900	Show	Dry well.....
					McClosky.....	1,550	70	1,105	395	1,900	.....	.....

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
13— S. W..	3	Donnel, Agent.	Irwin, No. 2	428	Kirkwood.	1,563		1,135	365			Dry	Salt water, 1,605 feet Black oil. Gas, 1,765 feet. Green oil.
					Tracy.	1,680		1,252	248	1,680			
					McClosky.	1,765		1,337	163	1,765	1,765		
					Bridgeport.	950	3	519	981				
					Buchanan.	1,270	90	839	661				
14— N. E...	4	Donnel, Agent.	Irwin, No. 6	431	Kirkwood.	1,555	35	1,124	376	1,558	1,864	155	Gas, 1,558 feet.
					do.	1,545	25	1,116	384	1,555	1,570		
					Bridgeport.	948		519	981				
					Kirkwood.	1,532	28	1,103	397	1,534	1,563		
					Bridgeport.	940	60	521	979				
	2	Bridgeport.	R. Kirkwood, No. 10	419	do.	1,005	65	586	914				
					Buchanan.	1,285	65	866	634				
					Kirkwood.	1,530	27	1,111	389	1,534	1,823		
					Bridgeport.	930	12	511	989				
					Kirkwood.	1,535	28	1,116	384	1,543	1,590		
	4	Bridgeport.	McPherson, No. 1	416	Bridgeport.	925	10	509	991				
					Kirkwood.	1,540	20	1,124	376	1,535	1,560		
					do.	1,540	20	1,112	388	1,542	1,562		
					Bridgeport.	773	27	338	1,162				
					do.	800	20	425	1,075				
14— N. E...	6	Bridgeport.	R. Kirkwood, No. 7	435	do.	900	20	465	1,035				Salt water.
					do.	960	90	525	979				
					Stray.	1,170	10	735	769				
					Buchanan.	1,255	95	890	650				
					Kirkwood-1.	1,540	40	1,105	395	1,551			
	7	Bridgeport.	R. Kirkwood, No. 5	435	Kirkwood-2.	1,585	5	1,150	350			1,200 Light	Salt water, 975 feet. Salt water, 1,280 feet. Abandoned.
					Kirkwood-3.	1,595	10	1,160	340				
					McClosky.	1,767	8	1,332	168				
					Bridgeport.	940	35	505	995	940	1,775		
					Buchanan.	1,280	80	845	655				
					Kirkwood.	1,541	29	1,106	394	1,553	1,570		

[illegible]

N. W.:

S. W.:

11	Ohio.	Christerson, No. 3.	429	Buchanan.	1,300	80,	371	629	1,567	Salt water.
12	Busch-Everett.	Christerson, No. 5.	417	Kirkwood.	1,529	38	1,100	400	.....	No record.
13	Busch-Everett.	Christerson, No. 4.	420	.....	.....	.....	.....	.....	.....	Dry.
14	Ohio.	S. Gray, No. 10.	425	Bridgeport.	925	175	500	.....	.....	Salt water.
				Buchanan.	1,230	130	805	1,000	.....
				Kirkwood.	1,550	40	1,125	375	1,570	
				McClosky.	1,770	4	1,345	1,002	1,771	Gas, 1,770 feet.
				Bridgeport.	925	190	498	1,002	.....
				Buchanan.	1,230	143	803	697	.....
15	Ohio.	S. Gray, No. 13.	427	Kirkwood.	1,550	43	1,123	377	1,566	Gas, 1,550 feet. Salt water, 1,585 feet.
16	Ohio.	S. Gray, No. 1.	417	McClosky.	1,770	2	1,343	157	1,770	280
17	Ohio.	S. Gray, No. 7.	425	do.	1,510	58	1,093	407	1,568	Gas, 1,770 feet.
				Bridgeport.	1,522	43	1,097	403	1,540	20
				Buchanan.	985	115	510	990	1,565	Gas, 1,540 feet.
18	Ohio.	S. Gray, No. 9.	425	Buchanan.	1,225	125	800	700	.....	Salt water.
				Kirkwood.	1,515	45	1,090	410	.....
				McClosky.	1,751	11	1,325	174	1,752	600
19	Ohio.	Smith, No. 2.	430	Bridgeport and Buchanan.	1,105	292	675	825	.....	Gas, 1,751 feet.
				Kirkwood.	1,541	24	1,111	389	1,545	25
				Bridgeport.	985	155	555	945	.....	Gas, 1,542 feet.
20	Ohio.	Smith, No. 3.	430	Buchanan.	1,230	110	800	700	.....	Salt water, 1,000 feet.
				Kirkwood.	1,545	30	1,115	385	.....
21	Ohio.	Smith, No. 1.	430	McClosky.	1,756	.....	1,326	174	1,756	660
				Bridgeport and Buchanan.	1,200	214	770	730	.....	Gas, 1,756 feet.
22	Ohio.	Smith, No. 4.	427	Kirkwood.	1,550	29	1,120	380	1,550	40
				Bridgeport.	925	190	498	1,002	.....	Gas, 1,550 feet.
				Buchanan.	1,230	130	803	697	.....
				Kirkwood.	1,552	43	1,125	375	1,552	.....
				McClosky.	1,770	2	1,343	157	1,770	300
1	Ohio.	L. Gillespie, No. 16.	432	Buchanan.	1,294	26	862	638	1,294	80
2	Ohio.	L. Gillespie, No. 18.	432	Kirkwood-1.	1,510	10	1,078	422	1,510	.....
3	Ohio.	L. Gillespie, No. 17.	432	Kirkwood-2.	1,530	25	1,098	402	1,550	.....
4	Ohio.	L. Gillespie, No. 15.	438	Buchanan.	1,518	46	1,086	414	1,525	50
				Kirkwood.	1,268	24	840	660	1,518	Gas, 1,518 feet.
5	Ohio.	L. Gillespie, No. 14.	429	Kirkwood.	1,541	25	1,113	387	1,545	35
6	Ohio.	L. Gillespie, No. 11.	429	Buchanan.	1,297	8	868	632	.....	Gas, 1,547 feet.
				Kirkwood.	1,520	40	1,091	409	1,526	20
				do.	1,518	59	1,080	411	1,559	Gas, 1,556 feet. Well abandoned.
7	Ohio.	L. Gillespie, No. 19.	422	Stray.	1,560	20	1,138	362	1,560	.....
8	Ohio.	L. Gillespie, No. 4.	422	McClosky.	1,748	3	1,396	174	1,750	137
9	Ohio.	Carlson, No. 2.	430	Kirkwood.	1,505	.....	1,083	417	1,530	25
10	Ohio.	Carlson, No. 1.	432	do.	1,496	83	1,067	434	1,500	20
11	Ohio.	Carlson, No. 3.	432	Buchanan.	1,279	30	846	653	1,285	200
12	Ohio.	Carlson, No. 5.	432	Kirkwood.	1,555	20	1,123	377	1,560	100
13	Ohio.	Carlson, No. 4.	432	do.	1,531	50	1,099	401	1,531	32
				do.	1,556	25	1,124	376	1,538	70

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Name.		Sand.				Initial product—barrels.	Remarks.	
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.			
15— N. E..	14 Ohio.....	Carlson, No. 8.	433	433	Buchanan	1,304	10	871	629	1,304	1,314	87	Well abandoned.
	15 Ohio.....	Carlson, No. 6.	432	432	do.....	1,300	34	868	632	1,311	1,334	107	
	16 Ohio.....	Carlson, No. 9.	432	432	Bridgeport.	1,900	110	868	632				
	17 Ohio.....	Carlson, No. 7.	432	432	Buchanan	1,534	26	1,102	398	1,536	1,565	5	
	1 Ohio.....	C. Seed, No. 6.	434	434	Kirkwood.	1,318	6	886	614	1,318	1,324	30	
					Buchanan.	1,299	6	865	635	1,302	1,305	160	
					do.....	1,280	10	842	658	1,280		180	
					do.....	1,539	16	1,101	399	1,539		20	
					Kirkwood-1.	1,556	6	1,128	372		1,558		
					Kirkwood-2.	1,268	15	836	664	1,270	1,283	250	
N. W..	3 Ohio.....	C. Seed, No. 4.	432	432	Buchanan.	1,275	13	842	658	1,277	1,288	200	
	4 Ohio.....	C. Seed, No. 3.	433	433	do.....	1,262	15	825	675		1,277	200	
	5 Ohio.....	C. Seed, No. 1.	437	437	do.....	1,280	25	847	653	1,282	1,305	200	
	6 Ohio.....	C. Seed, No. 2.	433	433	do.....	1,313	11	876	624	1,314	1,324	200	
	7 Ohio.....	Griggs, No. 3.	437	437	do.....	1,277		830	670		1,298		
	8 Ohio.....	Griggs, No. 2.	447	447	do.....	1,281		825	675		1,307		
	9 Ohio.....	Griggs, No. 1.	456	456	do.....	1,287	17	853	647	1,290	1,304	200	
	10 Ohio.....	Griggs, No. 5.	434	434	do.....	1,288	14	850	650	1,290	1,302	125	
	11 Ohio.....	Griggs, No. 4.	438	438	do.....	1,320	45	886	614				
		Griggs, No. 6.	434	434	do.....	1,528	51	1,094	406	1,546	1,579	100	
S. W..	1 Ohio.....	L. Seed, No. 2.	464	464	Kirkwood	1,283	37	819	681	1,288	1,320	720	Gas, 1,540 feet.
	2 Ohio.....	L. Seed, No. 4.	458	458	Buchanan	1,283	27	826	674	1,290	1,311	150	
	3 Ohio.....	L. Seed, No. 11.	444	444	do.....	1,270		826	674	1,309	1,317	150	
	4 Ohio.....	L. Seed, No. 13.	470	470	do.....	1,251	44	781	719	1,251	1,295	150	
	5 Ohio.....	L. Seed, No. 6.	475	475	do.....	1,290	31	815	685	1,295	1,321	200	
	6 Ohio.....	L. Seed, No. 12.	470	470	do.....	1,261	78	791	709	1,265	1,339	475	
	7 Ohio.....	L. Seed, No. 3.	453	453	do.....	1,282		829	671	1,286	1,316	125	
	8 Ohio.....	L. Seed, No. 7.	490	490	do.....	1,311	28	821	679	1,315	1,339	200	
	9 Ohio.....	L. Seed, No. 9.	463	463	do.....	1,300	27	837	663	1,305	1,325	175	
	10 Ohio.....	L. Seed, No. 1.	449	449	do.....	1,307	27	838	642	1,310	1,334	125	

11 Big Four...	E. Seed, No. 3.	485	do.	1,330	27	845	655	1,357	...
12 Big Four...	E. Seed, No. 8.	470	Buchanan	1,303	27	823	667	...	...
			Kirkwood	1,318	94	872	628	1,318	...
13 Big Four...	E. Seed, No. 16.	446	Tracey	1,508	10	1,062	438	...	...
			Buchanan	1,608	28	1,182	338	...	...
14 Big Four...	E. Seed, No. 2.	446	McClosky	1,806	...	1,300	140	1,806	2,000
15 Big Four...	E. Seed, No. 9.	448	do.	1,330	21	884	616	1,351	Abandoned
16 Big Four...	E. Seed, No. 6.	472	do.	1,302	28	854	646	...	...
17 Ohio...	G. Gillespie, No. 2.	440	do.	1,305	30	833	667	...	...
18 Ohio...	G. Gillespie, No. 3.	438	do.	1,288	...	853	647	1,300	1,319
19 Ohio...	G. Gillespie, No. 1.	441	do.	1,300	...	850	650	1,290	1,303
20 Ohio...	G. Gillespie, No. 6.	432	Kirkwood	1,581	17	1,149	641	1,318	1,325
21 Ohio...	G. Gillespie, No. 4.	441	Buchanan	1,290	21	849	651	1,583	1,608
22 Ohio...	W. Gillespie, Lot No. 1.	436	do.	1,270	25	834	666	1,280	1,295
23 Ohio...	G. Gillespie, No. 5.	433	do.	1,266	47	833	667	1,273	1,313
			Kirkwood	1,574	10	1,146	354	...	...
1 Ohio...	G. Gillespie, No. 7.	428	Tracey	1,574	20	1,222	278	1,660	1,670
2 Ohio...	G. Gillespie, No. 8.	448	Kirkwood	1,570	23	1,126	374	1,580	1,606
3 Ohio...	A. Gillespie, No. 4.	461	do.	1,573	25	1,112	388	1,573	1,603
4 Ohio...	A. Gillespie, No. 2.	451	do.	1,532	56	1,081	419	1,540	1,588
5 Ohio...	A. Gillespie, No. 1.	451	do.	1,492	81	1,041	459	1,492	1,576
6 Ohio...	A. Gillespie, No. 3.	436	do.	1,554	26	1,118	382	1,561	1,621
7 Ohio...	A. Gillespie, No. 2.	431	do.	1,538	23	1,107	393	1,538	1,650
8 Ohio...	C. Seed, No. 3.	427	Buchanan	1,284	23	857	643	...	...
			Kirkwood	1,561	29	1,134	366	1,564	1,590
9 Ohio...	C. Seed, No. 4.	430	Kirkwood-1	1,536	20	1,106	394	1,537	...
10 Ohio...	C. Gillespie, No. 3.	432	Kirkwood-2	1,565	21	1,135	365	...	1,586
11 Ohio...	C. Gillespie, No. 4.	440	Kirkwood-1	1,528	49	1,096	404	1,530	1,673
			Kirkwood-2	1,530	20	1,090	410	1,530	1,602
12 Ohio...	C. Gillespie, No. 1.	422	Buchanan	1,570	22	1,130	370	...	...
13 Ohio...	C. Gillespie, No. 2.	427	do.	1,273	65	851	649	...	...
14 Ohio...	C. Seed, No. 5.	428	Kirkwood	1,505	22	1,083	417	1,505	1,527
15 Ohio...	C. Seed, No. 2.	428	do.	1,512	30	1,085	415	1,514	1,618
16 Ohio...	C. Seed, No. 1.	431	Buchanan	1,278	24	850	650	...	No record
17 Ohio...	C. Seed, No. 2.	437	Kirkwood	1,563	22	1,132	368	1,569	1,685
18 Ohio...	C. Seed, No. 1.	430	Tracey	1,656	17	1,226	274	1,656	1,675
19 Ohio...	W. Gillespie, No. 5.	437	Buchanan	1,316	10	879	621	1,318	1,326
20 Ohio...	W. Gillespie, No. 6.	440	Kirkwood-1	1,494	16	1,054	446	1,500	...
21 Ohio...	W. Gillespie, No. 1.	448	Kirkwood-2	1,560	39	1,120	380	1,599	...
22 Ohio...	W. Gillespie, No. 4.	456	Buchanan	1,312	31	864	636	1,312	1,331
23 Ohio...	R. Gillespie, No. 12.	464	do.	1,356	44	900	600	1,420	...
			do.	1,351	23	887	613	...	1,374
1 Ohio...	R. Gillespie, No. 2.	472	do.	1,335	26	863	637	...	1,361
2 Ohio...	R. Gillespie, No. 1.	464	do.	1,300	19	836	664	...	1,319
3 Ohio...	R. Gillespie, No. 5.	453	do.	1,303	10	830	650	1,304	1,313
4 Ohio...	R. Gillespie, No. 6.	445	do.	1,290	16	845	655	1,295	1,306
5 Ohio...	R. Gillespie, No. 7.	443	do.	1,282	...	839	661	1,287	1,297
6 Ohio...	R. Gillespie, No. 4.	448	do.	1,280	17	832	665	1,286	1,297

S. E...

N. E...

Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Name.	Sand.			Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
										Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum—feet.			
16— N. E..	12 Ohio		R. Gillespie, No. 14.	441					Buchanan.	1,296	14	855	645	1,298	250	
	13 Ohio		R. Gillespie, No. 13.	439					do.	1,300	15	861	639	1,301	200	
	14 Ohio		R. Gillespie, No. 9.	443					do.	1,306	20	863	637	1,310	150	Salt water, 1,360 feet.
	1 Ohio		W. Gillespie, No. 3.	460					Kirkwood.	1,357	15	897	603			Well abandoned.
									Buchanan.	1,520	130	1,060	440			
									Buchanan.	1,351	8	881	881			Salt water, 1,585 feet.
	2 Ohio		W. Gillespie, No. 2.	470					Kirkwood.	1,508	21	1,038	462	1,512		Well abandoned.
	3 Ohio		Lewis, No. 7.	480					Buchanan.	1,348	18	868	632	1,352	200	
	4 Ohio		Lewis, No. 5.	452					Kirkwood.	1,512	29	1,060	440	1,524	1,541	
	5 Ohio		C. Gillespie Lot, No. 1.	445					do.	1,506	22	1,061	439	1,507	100	Gas, 1,510 feet.
N. W..	6 Ohio		Lewis, No. 6.	465					Buchanan.	1,312		847	653	1,315	175	
	7 Ohio		Lewis, No. 10.	480					do.	1,335	11	856	645	1,337	250	
	8 Ohio		Lewis, No. 3.	489					do.	1,345		856	644	1,350	200	
	9 Ohio		Lewis, No. 4.	481					do.	1,307	20	826	671	1,308	1,327	
	10 Ohio		Lewis, No. 9.	476					do.	1,305	41	829	671	1,315	300	
	11 Ohio		Lewis, No. 2.	486					do.	1,320	30	834	666	1,322	250	
									do.	1,325	95	836	664	1,349	100	
	12 Ohio		Lewis, No. 8.	489					Kirkwood.	1,530	43	1,041	459			Salt water, 1,665 feet.
	13 Ohio		R. Gillespie, No. 1.	489					Buchanan.	1,340	19	851	649		75	Well abandoned.
	14 Ohio		R. Gillespie, No. 3.	485					do.	1,358		873	627	1,368		
S. W..	15 Ohio		R. Gillespie, No. 8.	475					do.	1,340		865	635	1,345	250	
	16 Ohio		R. Gillespie, No. 11.	467					do.	1,350	11	883	617	1,353	60	
	17 Ohio		R. Gillespie, No. 10.	483					do.	1,340	22	857	643	1,352	105	
	1 Ohio		C. Seed, No. 4.	497					do.	1,331	24	834	666	1,335	50	
	2 Ohio		C. Seed, No. 1.	482					do.	1,320	47	838	662	1,357	150	Salt water, 1,367 feet.
	3 Ohio		C. Seed, No. 10.	493					do.	1,330	50	837	663	1,340	75	
	4 Ohio		C. Seed, No. 2.	483					do.	1,348	14	865	635	1,350	180	
	5 Ohio		C. Seed, No. 3.	485					do.	1,347	20	862	638	1,357	125	Salt water, 1,367 feet.
	6 Ohio		C. Seed, No. 5.	490					do.	1,346		856	644	1,357	300	
	7 Ohio		C. Seed, No. 6.	504					do.	1,338		834	666	1,347	50	
	8 Ohio		C. Seed, No. 7.	505					do.	1,341	48	836	664	1,370	150	

Lawrence County—Lawrence Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude * below sea level—feet.	Altitude above datum plane—feet.			
33— N. W. S. W.	1	Bridgeport.	Eshelman, No. 2.	475	Kirkwood.	1,415	85	940	560	.....	125	.....
	2	Bridgeport.	Eshelman, No. 1.	464	do.	1,477	15	1,013	487	.....	200	.....
	1	Ohio.	Middaugh, No. 2.	457	do.	1,451	19	994	506	.....	75	Gas, 1,451 feet.
	2	Ohio.	Middaugh, No. 5.	454	Bridgeport.	896	7	442	1,058	.....	100	Salt water, 976 feet.
	3	Ohio.	Middaugh, No. 1.	456	Bridgeport.	920	14	466	1,034	.....	190	.....
	4	Ohio.	Middaugh, No. 3.	453	Kirkwood.	1,432	42	976	524	.....	75	.....
	5	Ohio.	Middaugh, No. 6.	448	do.	1,443	45	990	1,460	.....	.....	.....
	6	Ohio.	Middaugh, No. 1.	458	Kirkwood-1.	1,440	6	992	508	.....	60	.....
	7	Ohio.	W. Stoltz, No. 1.	465	Kirkwood.	1,507	26	1,015	485	.....	60	.....
	8	Ohio.	W. Stoltz, No. 2.	480	Bridgeport.	1,070	11	1,605	451	.....	Dry	.....
					do.	937	439	457	895	.....	Dry	Salt water, 1,224 feet.
									1,043	2,003		

Lawrence County—Lukin Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
32 N. E.	1 Ohio.		J. Crane, No. 1.	480	{	Bridgeport-1	1,534	20	1,054	446		1,571	Dry	Salt water.
						Bridgeport-2	830	42					Show	
S. E.	1 Snowden Bros.		Laughlin, No. 1.	469	{	Bridgeport-3	940	5			940			
						Stray	1,304	11						
						Buchanan-1	1,506	14			1,506			
						Buchanan-2	1,614	118			1,705			
						Kirkwood	1,750	25			1,985			
						1,985	15			1,985			Salt water, 1,775 feet.	
						Stray	2,152	4			2,152	2,165		

Lawrence County—Petty Township.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.	
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.					Altitude above datum plane—feet.
N. E.	1	Ohio.	G. Gray, No. 2.	435	Kirkwood.	1,417	20	982	518	1,417	1,451	150	
	2	Ohio.	G. Gray, No. 3.	435	do.	1,418	15	983	517	1,418	1,450	80	
	3	Ohio.	G. Gray, No. 6.	435	“Gas”	1,335		900	600				Gas, 1,335 feet.
	4	Ohio.	I. Judy, No. 1.	435	Kirkwood do.	1,426	15	991	509	1,426	1,442	60	
	5	Ohio.	I. Judy, No. 2.	435	Tracey.	1,428	7	993	507				
	6	Ohio.	I. Judy, No. 3.	435	Kirkwood.	1,578	7	1,143	357	1,678	1,678	15	Salt water, 1,464 feet.
	7	Ohio.	N. Updike, No. 3.	435	“Gas”	1,443	23	1,008	492	1,446	1,466		Drilling.
	8	Ohio.	N. Updike, No. 1.	434	Kirkwood.	1,355	10	920	580				
	9	Ohio.	N. Updike, No. 2.	435	McClosky	1,435	10	1,000	500	1,438			25 Gas, 1,435 feet.
	10	Ohio.	N. Updike, No. 4.	434	“Gas”	1,650	12	1,215	285	1,702	1,702	25	Gas, 1,435 feet.
	11	Ohio.	N. Updike, No. 5.	435	Kirkwood.	1,328	17	893	607	1,335	1,445	20	
N. W.	1	Snowden Bros.	Drole, No. 3.	435	“Gas”	1,412	15	977	523				
					Kirkwood.	1,325	10	891	609				
					Kirkwood.	1,425	10	991	509	1,428		15	
					Tracey.	1,560		1,126	374				Gas, 1,560 feet.
					Kirkwood.	1,406	9	971	529	1,406	1,660	25	Gas, 1,406 feet.
					Bridgeport	890		455	1,045				
					Buchanan.	1,180	65	745	755				
					“Gas”	1,342	15	907	593	1,342			
					Kirkwood-1.	1,420	21	985	515	1,420		100	
					Kirkwood-2.	1,498	26	1,063	437				Gas.
					Tracey.	1,605	68	1,170	330				do.
2					McClosky.	1,687	8	1,252	248	1,695			Salt water, 1,687 feet.
					Bridgeport.	860	105	425	1,075				Salt water, 870 and 930 feet.
					Buchanan.	1,115	145	680	820				Salt water, 1,170 feet.
					Stray.	1,275	5	840	660				
					“Gas”	1,310	23	875	625	1,326			
					Kirkwood-1.	1,370	20	935	565	1,370			
					Kirkwood-2.	1,395	15	960	540	1,395	1,434	1.	

3	Snowden Bros.	Drole, No. 7.	435	Bridgeport.....	815	25	380	1, 120			Salt water.
				do.....	850	45	415	1, 085			
				do.....	900	63	465	1, 035			
				Buchanan.....	1, 110	130	675	825			Salt water, 1,150 to 1,240 feet.
4	Snowden Bros.	Drole, No. 8.	436	"Gas".....	1, 318	8	883	617	1, 326		
				Kirkwood-1.....	1, 383	12	928	572	1, 375		
				Kirkwood-2.....	1, 384	28	949	551	1, 402	1, 431	
				Bridgeport.....	850		415	1, 085			No record.
5	Snowden Bros.	Drole, No. 5.	435	do.....	950		515	985			Salt water.
				Buchanan.....	1, 175		740	700			
				"Gas".....	1, 320	20	885	615	1, 320		
				Kirkwood.....	1, 412	12	977	523	1, 412	1, 452	
6	Snowden Bros.	Drole, No. 4.	435	Bridgeport.....	865	5	430	1, 070			Salt water.
				do.....	899	40	464	1, 036			Much water.
				do.....	945	30	510	990			
				Buchanan.....	1, 040	205	605	895			Salt water, 1,120 feet.
7	Snowden Bros.	Drole, No. 10.	435	"Gas".....	1, 325	15	890	610			
				Kirkwood-1.....	1, 408	6	973	527	1, 408		Salt water.
				Kirkwood-2.....	1, 454	10	1, 019	481			Gas, 1,490 feet.
				Kirkwood-3.....	1, 490	15	1, 055	445			Gas, 1,565 feet.
1	Snowden Bros.	Drole, No. 1.	436	Tracey.....	1, 565	15	1, 130	370	1, 665		No record.
				Bridgeport.....	840		404	1, 066			Salt water, 1,020 and 1,210 feet.
				"Gas".....	1, 300	15	864	636			
				Bridgeport.....	1, 865	85	429	1, 071	1, 334	35	
2	Snowden Bros.	Drole, No. 6.	436	Buchanan.....	1, 050	125	614	886			
				"Gas".....	1, 307	13	871	629	1, 452	60	
				Bridgeport.....	1, 298	14	863	637			No record.
				do.....	805	11	370	1, 130			Gas 50
3	Snowden Bros.	Drole, No. 2.	435	Bridgeport.....	824	15	389	584			
				do.....	851	122	416	584			
				Buchanan.....	1, 143	64	708	792			
				"Gas".....	1, 300	12	865	635			90
5	Snowden Bros.	Piper, No. 1.	435	Bridgeport.....	900		465	835			
				"Gas".....	1, 307	17	872	628			Salt water, 900, 1050 feet.
				Bridgeport.....	950		514	986			Salt water, 900, 1,050 feet.
				do.....	1, 311	15	875	625			Show
1	Snowden Bros.	Piper, No. 4.	436	Kirkwood-1.....	1, 445	12	1, 009	491			
				Kirkwood-2.....	1, 460	20	1, 024	476			
				Bridgeport.....	855		420	1, 080			
				Stray.....	1, 200	25	765	735			Salt water, 855 feet.
3	Snowden Bros.	Piper, No. 5.	435	"Gas".....	1, 308	24	873	627			Salt water, 1,200 feet.
				Bridgeport.....	930	70	496	1, 004			Dry
				"Gas".....	1, 306	18	872	628			
				Bridgeport.....	930	70	496	1, 004			Dry
4	Ohio.	R. Judy, No. 1.	434	Bridgeport.....	1, 307	22	873	627			
				"Gas".....	1, 445		1, 069	491			
				Kirkwood.....	1, 559		1, 153	347			Gas, 1,589 feet.
				Tracey.....	1, 559		1, 153	347	1, 629		

S. W.

S. E.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1— S. E...	7	Ohio.....	R. Judy, No. 4.....	436	"Gas".....	1,312	8	876	624	.....	.....	.....	Salt water, 1,660 to 1,670 feet.
	8	Ohio.....	R. Judy, No. 5.....	436	McClosky.....	1,660	10	1,224	276	.....	1,700	Dry	Well abandoned.
	9	Ohio.....	M. Martin, No. 1.....	434	Tracy.....	1,408	5	972	528	1,408	.....	.....	Gas, 1,408 to 1,413 feet.
	10	Ohio.....	M. Martin, No. 3.....	434	"Gas".....	1,565	10	1,129	371	1,565	.....	10	.....
	11	Ohio.....	M. Martin, No. 4.....	434	McClosky.....	1,330	13	986	604	.....	1,685	Dry	Black oil.
2— N. E...	1	Ohio.....	Poland, No. 1.....	433	"Gas".....	1,358	45	1,206	294	.....	.....	.....	.....
	2	Ohio.....	Poland, No. 2.....	433	Tracy.....	1,300	1,600	1,156	344	.....	1,634	Show	Black oil.
	3	Ohio.....	Poland, No. 3.....	435	"Gas".....	1,425	15	866	634	.....	.....	.....	.....
	4	Ohio.....	Poland, No. 4.....	435	Kirkwood.....	1,300	20	891	509	.....	1,674	25	.....
	5	Ohio.....	Poland, No. 5.....	433	McClosky.....	1,662	10	1,228	272	1,665	.....	.....	.....
	6	Ohio.....	Poland, No. 6.....	433	"Gas".....	1,360	10	927	573	.....	.....	.....	.....
	7	Ohio.....	Poland, No. 7.....	433	Kirkwood-1.....	1,386	8	953	547	.....	.....	.....	.....
	8	Ohio.....	Poland, No. 8.....	433	Kirkwood-2.....	1,470	30	1,037	463	1,473	1,507	50	Gas, 1,470 feet.
	9	Ohio.....	Poland, No. 9.....	433	Kirkwood-1.....	1,433	13	1,000	500	.....	.....	.....	Gas, 1,497 to 1,513 feet.
	10	Ohio.....	Poland, No. 10.....	433	Kirkwood-2.....	1,497	16	1,064	436	.....	1,513	Gas	4,000,000 cubic feet daily.
3— N. W.. S. W..	1	Ohio.....	Poland, No. 11.....	435	"Gas".....	.....	.....	.....	.....	.....	.....	.....	Drilling.
	2	Ohio.....	Poland, No. 12.....	435	McClosky.....	1,649	11	1,216	284	.....	.....	Gas	Gas well. No record.
	3	Ohio.....	Poland, No. 13.....	435	Kirkwood-1.....	1,419	21	984	516	1,649	1,661	20	Gas, 1,450 to 1,475 feet.
	4	Ohio.....	Poland, No. 14.....	435	Kirkwood-2.....	1,650	15	1,050	450	.....	.....	.....	Gas, 1,450 to 1,475 feet.
	5	Ohio.....	Poland, No. 15.....	435	McClosky.....	1,450	16	1,215	285	.....	1,666	Gas	2,500,000 cubic feet daily.
	6	Ohio.....	Poland, No. 16.....	435	Kirkwood.....	1,440	34	1,002	498	1,442	.....	Gas	Gas, 1,442 feet.
	7	Ohio.....	Poland, No. 17.....	435	do.....	1,546	4	1,096	404	.....	1,710	Gas	Gas, 1,546 to 1,550 feet.
	8	Ohio.....	Poland, No. 18.....	435	Kirkwood-1.....	1,582	18	1,146	354	.....	2,001	Dry	Water, 1,583 to 1,600 feet.
	9	Ohio.....	Poland, No. 19.....	440	Kirkwood-2.....	1,500	10	1,060	440	.....	.....	.....	.....
	10	Ohio.....	Poland, No. 20.....	445	Tracy.....	1,548	10	1,108	392	1,548	1,825	30	.....
4— S. W..	1	Ohio.....	Poland, No. 21.....	445	Tracy.....	1,582	10	1,137	363	1,582	1,600	30	.....
	2	Ohio.....	Poland, No. 22.....	450	Kirkwood.....	1,582	20	1,132	368	1,587	1,610	200	.....

4	Ohio	Raop, No. 1.	455	do	1, 620	9	1, 165	335	1, 760	Dry	Salt water, 1,759 feet.
				Bridgeport.	965	15	515	985			Salt water, 1,100 feet.
5	Snowden Bros.	Armitage, No. 1.	450	do	1, 085	15	635	865			
				Buchanan-1.	1, 180	25	730	770			
				Buchanan-2.	1, 220	15	770	730			
				Stray	1, 395	5	945	555			
				Kirkwood	1, 570	25	1, 120	380	1, 581	100	
				Bridgeport.	844	25	399	1, 101			
				do	924	12	479	1, 021			
				do	951	13	506	994			
6	Snowden Bros.	Armitage, No. 2.	445	Buchanan	1, 140	30	695	805			Hole full of water, 1,140 feet.
				"Gas"	1, 505	6	1, 060	440	1, 505	Show	
				Kirkwood	1, 535	30	1, 040	410	1, 555		
				Tracey	1, 578	5	1, 133	367	1, 578		Lime and sand.
				Bridgeport.	558	17	419	1, 081			
				do	910	21	471	1, 020			Salt water, 931 feet.
				do	960	120	521	979			
				Buchanan-1	1, 150	40	711	789			
				Buchanan-2	1, 260	10	821	679			
				"Gas"	1, 450	25	1, 011	459			
				Kirkwood-1	1, 481	20	1, 012	458	1, 481	Show	
				Kirkwood-2	1, 511	19	1, 072	428			
				Tracey-1	1, 591	29	1, 152	348			
				Tracey-2	1, 630	25	1, 191	309	1, 708		
				Kirkwood	1, 505	8	1, 068	492			Gas 600 pounds pressure, 7,000-000 cubic feet gas.
2	Snowden Bros.	Piper, No. 3.	437	do	1, 463		1, 028	472	1, 463		Gas, 1,507 feet. Abandoned.
3	Ohio	Stoltz, No. 2.	435	do	1, 439	40	1, 004	496			
				Tracey-1	1, 588	16	1, 153	347			
				Tracey-2	1, 633	20	1, 198	302	2, 002	Dry	
				Kirkwood-1	1, 444	16	1, 008	492			
5	Ohio	Stoltz, No. 3.	436	Kirkwood-2	1, 475	1	1, 039	461			Gas 1,480 feet.
6	Ohio	Stoltz, No. 1.	437	Kirkwood	1, 460	14	1, 023	477	1, 660	30	
				do	1, 461	30	1, 026	474	1, 470		Gas, 1,461 feet.
				Tracey-1	1, 586	14	1, 151	349			
				Tracey-2	1, 630	19	1, 195	305	1, 635	90	
7	Ohio	Stoltz, No. 5.	435	Buchanan	1, 260			820			Salt water, 1,260 to 1,280 feet.
				Stray	1, 580	8	1, 140	360			
				do	1, 630	8	1, 190	310			
				Kirkwood	1, 730			210	1, 833		Dry Salt water, 1,730 to 1,745 feet.
1	Ohio	Haines, No. 1.	440								
1	Ohio	M. Martin, No. 2.	434	Tracey	1, 587			347	1, 602	1, 616	
2	Ohio	R. Hardaere, No. 1.	436	do	1, 596	10	1, 160	340			
				McClosky	1, 660	13	1, 224	276	1, 666	200	
				"Gas"	1, 375	5	939	561			
				Kirkwood	1, 457	5	1, 021	479			
				Tracey	1, 575	55	1, 139	361	1, 575	1, 658	55

3—

S. W.

6— S. W.

6	Ohio.....	A. Applegate, No. 6.....	434	"Gas".....	1, 286	14	852	648	1, 286	1, 323	1, 356	50	.....
7	Ohio.....	A. Applegate, No. 13.....	435	do.....	1, 323	11	889	611	1, 323	1, 338	1, 363	115	.....
8	Ohio.....	A. Applegate, No. 7.....	434	McClosky-1.....	1, 337	26	902	356	1, 338	1, 357	1, 378	125	.....
9	Ohio.....	A. Applegate, No. 3.....	434	McClosky-2.....	1, 578	6	1, 144	356	1, 338	1, 357	1, 378	125	.....
				"Gas".....	1, 608	44	1, 174	326	1, 608	1, 652	1, 652	125	.....
				Tracey.....	1, 297	20	863	637	1, 297	1, 326	1, 351	Gas	1, 495 feet.
				Bridgport.....	1, 495	890	1, 061	439	1, 536	1, 536	1, 536	Gas	1, 495 feet.
				Stray.....	1, 270	836	456	1, 044	1, 536	1, 536	1, 536	Gas	1, 495 feet.
				"Gas".....	1, 302	868	836	664	1, 536	1, 536	1, 536	Gas	1, 495 feet.
10	Shaffer & Smathers.....	E. Wiswall, No. 2.....	434	Tracey.....	1, 509	1, 075	425	632	1, 509	1, 509	1, 509	550	.....
				McClosky-1.....	1, 577	17	1, 143	357	1, 577	1, 577	1, 577	550	.....
				McClosky-2.....	1, 595	16	1, 161	339	1, 595	1, 595	1, 595	550	.....
				"Gas".....	1, 283	10	849	651	1, 283	1, 283	1, 283	550	.....
11	Shaffer & Smathers.....	E. Wiswall, No. 9.....	434	Kirkwood.....	1, 398	8	964	536	1, 398	1, 398	1, 398	Gas, 1,398 feet.	.....
				Tracey.....	1, 535	7	1, 101	399	1, 535	1, 535	1, 535	Gas, 1,335 feet.	.....
				McClosky.....	1, 612	10	1, 178	322	1, 612	1, 612	1, 612	40	Lime, 1,342 to 1,626 feet.
				Bridgport.....	1, 892	10	1, 460	401	1, 892	1, 892	1, 892	Dry	.....
12	Shaffer & Smathers.....	E. Wiswall, No. 3.....	435	Tracey.....	1, 405	25	970	530	1, 405	1, 405	1, 405	15	Abandoned.
				McClosky.....	1, 517	13	1, 082	418	1, 517	1, 517	1, 517	Dry	No record.
				"Gas".....	1, 597	17	1, 162	338	1, 597	1, 597	1, 597	125	.....
13	Shaffer & Smathers.....	E. Wiswall, No. 1.....	435	"Gas".....	1, 295	9	860	640	1, 295	1, 295	1, 295	20	.....
14	Shaffer & Smathers.....	E. Wiswall, No. 7.....	435	Kirkwood.....	1, 350	19	915	585	1, 350	1, 350	1, 350	15	.....
15	Shaffer & Smathers.....	E. Wiswall, No. 8.....	435	do.....	1, 363	23	928	572	1, 363	1, 363	1, 363	70	Red rock between 1,320 and 1,400 feet.
16	Shaffer & Smathers.....	E. Wiswall, No. 5.....	435	do.....	1, 370	26	935	565	1, 370	1, 370	1, 370	15	.....
				"Gas".....	1, 310	10	876	624	1, 310	1, 310	1, 310	70	.....
17	Shaffer & Smathers.....	E. Wiswall, No. 4.....	434	Kirkwood.....	1, 383	22	949	551	1, 383	1, 383	1, 383	15	.....
				Kirkwood-1.....	1, 405	22	970	530	1, 405	1, 405	1, 405	70	.....
				Kirkwood-2.....	1, 467	16	1, 032	468	1, 467	1, 467	1, 467	70	.....
18	Shaffer & Smathers.....	E. Wiswall, No. 6.....	435	Bridgport.....	890	5	456	1, 044	890	890	890	70	.....
				"Gas".....	1, 311	7	877	623	1, 311	1, 311	1, 311	70	.....
1	Shaffer & Smathers.....	J. A. Wiswall, No. 2.....	434	Kirkwood-1.....	1, 385	8	951	549	1, 385	1, 385	1, 385	75	.....
				Kirkwood-2.....	1, 470	8	1, 036	464	1, 470	1, 470	1, 470	75	.....
				McClosky.....	1, 604	26	1, 170	330	1, 604	1, 604	1, 604	75	.....
2	Paden.....	J. A. Wiswall, No. 1.....	434	Kirkwood-1.....	1, 490	11	1, 055	445	1, 490	1, 490	1, 490	75	.....
3	Shaffer & Smathers.....	J. A. Wiswall, No. 3.....	435	Tracey.....	1, 570	15	1, 135	365	1, 570	1, 570	1, 570	75	.....
				"Gas".....	1, 350	5	915	585	1, 350	1, 350	1, 350	75	.....
4	Shaffer & Smathers.....	J. A. Wiswall, No. 4.....	435	Kirkwood.....	1, 417	10	982	518	1, 417	1, 417	1, 417	60	.....
5	Shaffer & Smathers.....	J. A. Wiswall, No. 5.....	434	Kirkwood-1.....	1, 407	4	973	527	1, 407	1, 407	1, 407	50	.....
6	Ohio.....	J. Bolles, No. 2.....	435	Kirkwood-2.....	1, 438	12	1, 004	496	1, 438	1, 438	1, 438	50	.....
7	Ohio.....	J. Bolles, No. 4.....	435	Kirkwood.....	1, 436	10	1, 001	499	1, 436	1, 436	1, 436	50	.....
				do.....	1, 456	14	1, 021	479	1, 456	1, 456	1, 456	50	.....
8	Ohio.....	J. Bolles, No. 1.....	428	Tracey.....	1, 602	26	1, 174	326	1, 602	1, 602	1, 602	30	.....
				McClosky.....	1, 692	26	1, 264	236	1, 692	1, 692	1, 692	30	.....

S. E.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
11—													
N. E...	1	Snowden Bros.	Piper, No. 11.	435	Bridgeport.....	860	90	425	1, 075				Salt water, 900 to 920 feet.
					do.....	955	65	520	980				Salt water, 1,000 to 1,020 feet.
					Stray.....	1, 225	10	790	710				
					do.....	1, 237	38	802	698				
					do.....	1, 373	12	938	562	1, 380	Show		
S. E...	2	Snowden Bros.	Piper, No. 2.	445	do.....	1, 425	25	990	510	1, 430			
					Kirkwood.....	1, 485	20	1, 050	450				
					Tracey.....	1, 535	5	1, 100	400				
					McClosky.....	1, 595	28	1, 160	340	1, 670			Gas, 1,612 feet, "green" oil sand.
					Bridgeport.....	890		445	1, 055				
					do.....	1, 420	16	975	525				
					Kirkwood.....	1, 478	38	1, 033	467			60	
					McClosky.....	1, 607	63	1, 162	338			40	Gas, 1,545 feet. salt water, 1,560 feet.
					Tracey.....	1, 545	15	1, 097	403	1, 550			
					McClosky.....	1, 616	8	1, 168	332				
					Tracey.....	1, 580	20	1, 102	398	1, 584	110	Gas, 1,584 to 1,600 feet.	
McClosky.....	1, 655	20	1, 188	312	1, 655	25	Gas, 1,655 feet.						
S. E...	3	Haywood	M. Smith, No. 1.	468	Stray.....	1, 290		822	678				No record.
					do.....	1, 820		1, 352	148	1, 825	Dry	No upper sands.	
					McClosky.....	1, 737	23	1, 252	248	1, 813	Dry	Salt water, 1,290 and 1,820 feet.	
					do.....	1, 695	15	1, 219	231	1, 735	25	Gas, 1,739 feet.	
					Kirkwood.....	1, 489	11	1, 047	453	1, 735	25		
					McClosky.....	1, 660	20	1, 200	300	1, 670	75		
					Bridgeport.....	1, 010	50	1, 543	957	1, 688			
					McClosky.....	1, 671	11	1, 204	296	1, 671	23	Gas and oil, 1,671 feet.	
					do.....	1, 671	11	1, 204	296	1, 671	23	Gas and oil, 1,671 feet.	
					do.....	1, 671	11	1, 204	296	1, 671	23	Gas and oil, 1,671 feet.	

S. E...	1 Ohio.....	A. R. Applegate, Tr. No. 1.	436	{ Buchanan	1, 202	112	766	734	1, 525	Gas	Gas, 1,521 feet.
	2 Ohio.....	A. R. Applegate, Tr. No. 13	436	{ Kirkwood	1, 375	20	939	561	1, 380	125	Gas, 1,375 feet.
	3 Morrison.....	C. Thorn, No. 3.....	437	{ "Gas",	1, 300	11	872	628	1, 400	120	
	4 Morrison.....	C. Thorn, No. 2.....	442	{ Kirkwood	1, 386	9	946	551	1, 402	100	
	5 Morrison.....	C. Thorn, No. 4.....	448	{ "Gas",	1, 239	9	857	643	1, 402	100	
	6 Ohio.....	A. R. Applegate, Tr. No. 15	437	{ Kirkwood	1, 385	11	943	557	1, 402	100	
	7 Ohio.....	A. R. Applegate, Tr. No. 12	436	{ "Gas",	1, 312	10	864	636	1, 408	80	
	8 Ohio.....	A. R. Applegate, Tr. No. 14	435	{ "Gas",	1, 335	13	947	553	1, 408	80	
	9 Ohio.....	A. R. Applegate, Tr. No. 1	436	{ "Gas",	1, 283	62	846	654	1, 345	135	
	10 Ohio.....	A. R. Applegate, No. 9.....	436	{ "do",	1, 237	58	861	639	1, 300	110	
	11 Ohio.....	A. R. Applegate, No. 5.....	436	{ Kirkwood	1, 355	20	919	581	1, 365	137	
	12 Ohio.....	A. R. Applegate, No. 8.....	435	{ "Gas",	1, 230	60	824	676	1, 379	200	
N. E...	1 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Tracey	1, 509	16	1, 073	427	1, 583	Gas	Gas, 1,509 feet.
	2 Ohio.....	A. R. Applegate, Tr. No. 6.	435	{ McClosky	1, 583	42	1, 147	333	1, 630	30	
	3 Ohio.....	A. R. Applegate, No. 3.....	433	{ "Gas",	1, 288	8	752	648	1, 288	45	
	4 Ohio.....	A. R. Applegate, No. 4.....	436	{ Kirkwood	1, 340	21	904	596	1, 340	100	
	5 Ohio.....	A. R. Applegate, Tr. No. 19	435	{ "Gas",	1, 230	3	855	645	1, 230	100	
	6 Ohio.....	A. R. Applegate, Tr. No. 18	428	{ Kirkwood	1, 355	17	920	580	1, 355	100	
	1 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Tracey	1, 515	75	1, 080	420	1, 615	Gas	Gas, 1,515 feet.
	2 Ohio.....	A. R. Applegate, Tr. No. 6.	435	{ McClosky	1, 330	8	895	605	1, 695	165	
	3 Ohio.....	A. R. Applegate, No. 3.....	433	{ Tracey	1, 502	13	1, 067	340	1, 670	240	
	4 Ohio.....	A. R. Applegate, No. 4.....	436	{ McClosky	1, 505	75	1, 160	340	1, 505	15	
	5 Ohio.....	A. R. Applegate, Tr. No. 19	435	{ "Gas",	1, 302	13	989	631	1, 303	Gas	Gas, 1,502 feet.
N. W..	1 Ohio.....	A. R. Applegate, Tr. No. 18	428	{ Kirkwood	1, 367	20	934	566	1, 315	65	
	2 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ "do",	1, 355	20	949	551	1, 387	Gas	Drilling.
	3 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Bridgeport	920	90	492	1, 008	1, 680	Gas	Gas, 1,662 feet.
	4 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Kirkwood	1, 350	20	922	578	1, 662	Gas	Gas, 1,371 feet. Well abandoned.
	5 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 662	8	234	266	1, 654	60	
	6 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ "Gas",	1, 330	4	894	605	1, 654	35	
	7 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ "do",	1, 353	20	918	582	1, 580	20	
	8 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 580	15	1, 145	355	1, 580	60	
	9 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Kirkwood	1, 375	18	940	560	1, 375	35	
	10 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Kirkwood-1	1, 398	8	963	537	1, 398	20	
	11 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ Kirkwood-2	1, 408	28	973	527	1, 408	35	
	12 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-1	1, 599	12	1, 166	334	1, 599	75	
N. W..	1 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-2	1, 629	6	1, 196	304	1, 611	662	
	2 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-1	1, 616	30	1, 181	319	1, 631	75	
	3 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-2	1, 649	16	1, 214	286	1, 649	75	
	4 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-1	1, 438	24	1, 092	498	1, 438	Black oil.	
	5 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky-2	1, 650	20	1, 214	286	1, 650	Green oil.	
	6 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 400	20	966	534	1, 405	321	
	7 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 610	30	1, 176	321	1, 610	1, 612	
	8 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 353	20	918	582	1, 580	60	
	9 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 580	15	1, 145	355	1, 580	60	
	10 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 375	18	940	560	1, 375	35	
	11 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 398	8	963	537	1, 398	20	
	12 Ohio.....	A. R. Applegate, Tr. No. 10	435	{ McClosky	1, 408	28	973	527	1, 408	35	

S. E..	12 Ohio.....	E. K. Crutchfield, No. 3.....	434	"Gas".....	1,397	6	963	537	449	1,485	1,520	30	.....
	1 Ohio.....	Perry King, No. 33.....	434	"Gas".....	1,485	35	1,051	537	449	1,485	1,520	30	.....
	2 Ohio.....	J. R. King, No. 1.....	433	Kirkwood.....	1,383	24	949	551	1,307	1,427	1,450	66	.....
	3 Ohio.....	E. Applegate, No. 2.....	433	"Gas".....	1,424	26	990	530	1,327	1,450	1,455	75	.....
14— N. E..	4 Ohio.....	E. Applegate, No. 1.....	433	Stray.....	1,367	8	934	566	1,367	1,400	1,455	120	.....
	1 Ohio.....	J. Klinger, No. 1.....	449	"Gas".....	1,393	10	990	540	1,393	1,455	1,455	125	.....
	2 Ohio.....	J. Klinger, No. 5.....	458	Kirkwood.....	1,430	15	997	503	1,430	1,490	1,720	50	Gas, 1,517 feet.
	3 Ohio.....	J. Klinger, No. 8.....	442	"Gas".....	1,390	12	957	543	1,390	1,490	1,720	50	Gas, 1,517 feet.
N. W..	4 Ohio.....	J. Klinger, No. 7.....	440	Tracey.....	1,490	28	845	655	1,490	1,720	1,720	120	.....
	5 Ohio.....	J. Klinger, No. 2.....	470	"Gas".....	1,278	22	945	555	1,378	1,443	1,443	125	.....
	6 Ohio.....	J. Klinger, No. 4.....	470	Kirkwood.....	1,431	15	982	518	1,443	1,443	1,443	125	.....
	7 Ohio.....	O. H. Smith, No. 1.....	481	do.....	1,452	12	994	506	1,452	1,472	1,472	7	.....
S. E..	1 Raywood.....	Waggoner, No. 1.....	470	do.....	1,453	30	1,011	489	1,455	1,775	1,775	25	.....
	1 Craig & Lowrie.....	Martin, No. 2.....	443	McClosky.....	1,660	25	1,020	280	1,660	1,687	1,687	145	.....
	2 Craig & Lowrie.....	Martin, No. 1.....	441	Kirkwood.....	1,493	11	1,023	477	1,493	1,549	1,549	50	.....
	3 Snowden Bros.....	Mundy, No. 1.....	438	do.....	1,498	51	1,028	472	1,545	1,549	1,549	50	.....
N. E..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,730	31	1,249	251	1,730	1,805	1,805	Light	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Stray.....	1,490	5	1,020	480	1,490	1,805	1,805	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood.....	1,500	10	1,057	443	1,500	1,880	1,880	Salt water, 1,850 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,700	3	1,257	243	1,700	1,955	1,955	Lime, 1,880 to 1,955 feet.	.....
17— N. E..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood.....	1,468	5	1,027	473	1,468	1,697	1,697	Light	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,672	16	1,231	269	1,672	1,697	1,697	Salt water, 945 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Bridgeport.....	900	45	462	1,038	900	1,697	1,697	Salt water, 945 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Bridgeport and Buchanan.....	1,000	115	562	938	1,000	1,697	1,697	Hole full of water, 1,115 feet.	.....
N. W..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Buchanan.....	1,250	20	812	688	1,250	1,697	1,697	Salt water, 1,270 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Stray.....	1,375	17	937	563	1,375	1,697	1,697	Salt water, 1,270 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	"Gas".....	1,465	20	1,027	473	1,465	1,697	1,697	Salt water, 1,515 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood.....	1,500	50	1,062	438	1,500	1,775	1,775	Green oil. Well abandoned.	.....
N. E..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,680	12	1,212	255	1,680	1,775	1,775	Salt water, 1,023 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Tracey.....	883	20	408	1,092	883	1,092	1,092	Salt water, 1,023 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	do.....	1,003	20	528	972	1,003	1,092	1,092	Salt water, 1,023 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	do.....	1,095	20	620	880	1,095	1,092	1,092	Salt water, 1,023 feet.	.....
N. E..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	do.....	1,192	18	717	783	1,192	1,092	1,092	Salt water, 1,023 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Buchanan-1.....	1,315	55	810	690	1,315	1,092	1,092	Salt water, 1,970, 2,025, 2,110, 2,235 and 2,593 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Buchanan-2.....	1,520	76	1,045	455	1,520	1,092	1,092	Lime, 2,003 to 2,936 feet.	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood.....	1,635	13	1,160	340	1,635	1,092	1,092	Lime, 2,003 to 2,936 feet.	.....
N. E..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Tracey.....	1,763	99	1,288	212	1,763	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,937	8	1,462	38	1,937	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood.....	1,589	22	1,161	337	1,589	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Tracey.....	1,727	17	1,299	201	1,727	1,092	1,092	Dry	.....
N. W..	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	McClosky.....	1,793	1	1,365	135	1,793	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood-1.....	1,433	5	998	502	1,433	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood-2.....	1,452	32	1,017	483	1,452	1,092	1,092	Dry	.....
	1 Snowden Bros.....	I. Vanatia, No. 2.....	475	Kirkwood-2.....	1,452	32	1,017	483	1,452	1,092	1,092	Dry	.....

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.										
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.														
17— N. W. S. W.		2 Central Refining Co.	Klinger, No. 1.	435	Bridgeport.	872	32	437	1,063	875	919												
														{	“Gas”	1,347	68	911	589	1,451	1,493	150	Gas, 1,451 feet.
															Tracey	1,451	29	1,015	485	1,451	1,493	150	
															Kirkwood	1,369	24	933	567	1,372	1,423	40	
															do.	1,424	20	988	512	1,424	1,471	50	
															“Gas”	1,340	25	904	596	1,340	1,447	35	
															Kirkwood-1.	1,318	15	882	618	1,318			
															Kirkwood-2.	1,356	12	920	580	1,356			
															“Gas”	1,378	12	942	558	1,378	1,396		
															“Gas”	1,282	15	845	655	1,282	1,305	25		No record
{	Kirkwood	1,384	16	950	550	1,384	1,402	60															
	Tracey	1,470	18	1,034	466	1,470	1,491	30															
	Kirkwood	1,413	16	980	520	1,418	1,435																
	Bridgeport.	900	10	467	1,033																		
	“Gas”	1,343	15	910	590	1,475																	
	Kirkwood	1,430	5	994	506																		
	McClosky	1,596	4	1,160	340	1,706																	
	Kirkwood	1,406	16	970	530	1,422																	
	Bridgeport.	923	19	487	1,013	1,492	125																
S. E.		2 Central Refining Co.	M. Wood, No. 2.	433	Bridgeport.	900	10	467	1,033			Dry	No record										
														{	“Gas”	1,343	15	910	590	1,475			
															Kirkwood	1,430	5	994	506				
															McClosky	1,596	4	1,160	340	1,706			
															Kirkwood	1,406	16	970	530	1,422			
															Bridgeport.	923	19	487	1,013	1,492	125		
															do.	920	20	484	1,016				
															McClosky	1,619	9	1,183	317	1,640	60		
															Bridgeport.	903	15	467	1,033				
															“Gas”	1,282	10	846	654	15			
18— N. E.		1 Shaffer & Smathers.	Wright, No. 1.	436	Kirkwood	1,430	5	994	506			Dry											
														{	McClosky	1,596	4	1,160	340	1,706			
															Kirkwood	1,406	16	970	530	1,422			
															Bridgeport.	923	19	487	1,013	1,492	125		
															do.	920	20	484	1,016				
															McClosky	1,619	9	1,183	317	1,640	60		
															Bridgeport.	903	15	467	1,033				
															“Gas”	1,282	10	846	654	15			
															Stray	1,450	8	1,014	486				
															do.	1,485	7	1,049	451				
S. E.		5 Shaffer & Smathers.	W. Applegate, No. 5.	436	Tracey	1,515	15	1,079	421			Gas, 1,485 feet.											
														{	Stray	1,580	10	1,144	356				
															McClosky	1,606	6	1,170	330	1,612	600		
															Gas	1,485	7	1,049	451				
															Stray	1,580	10	1,144	356				
															McClosky	1,606	6	1,170	330	1,612	600		
															Gas	1,485	7	1,049	451				
															Stray	1,580	10	1,144	356				
															McClosky	1,606	6	1,170	330	1,612	600		
															Gas	1,485	7	1,049	451				
Stray	1,580	10	1,144	356																			
McClosky	1,606	6	1,170	330	1,612	600																	

6	Shaffer & Smathers	W. Applegate, No. 1	436	{ Bridgeport. Stray	890 1, 433	12 10	454 997	1, 046 503	1, 455 910	115 50	..... Broken sand
7	Shaffer & Smathers	W. Applegate, No. 3	436	{ Bridgeport. do. "Gas"	890 888 1, 304	17 32 16	454 452 868	1, 046 048 632	..... ..... .....	..... ..... 75	...............
8	Shaffer & Smathers	W. Applegate, No. 7	436	{ Stray do. "Gas"	1, 430 1, 500 1, 555	10 10 3	994 1, 064 1, 129	506 436 371	...............	...............	...............
9	Shaffer & Smathers	W. Applegate, No. 2	436	{ McClosky do. "Gas"	1, 595 1, 601 888	6 6 32	1, 159 1, 465 452	341 335 048	1, 617 940 1, 595	1, 079 50 20	Lime, 1,598 to 1,601 feet. Salt water. do
10	Shaffer & Smathers	W. Applegate, No. 4	436	{ Bridgeport. McClosky do.	1, 595 1, 637 1, 771	20 15 1	1, 159 201 299	341 1, 595 1, 780	...............	...............	...............
11	Central Refining Co.	Klinger, No. 5	436	{ Bridgeport. "Gas" Kirkwood	1, 868 1, 307 1, 343	45 7 15	1, 432 871 907	1, 068 629 593	895 1, 314.....	...............	...............
12	Central Refining Co.	Klinger, No. 11	436	{ Bridgeport. "Gas" Kirkwood-1 Kirkwood-2	1, 200 1, 340 1, 418	20 22 22	854 904 982	646 393 518	..... 1, 420 .....	..... ..... .....	..... Gas, 1,500 feet. Oil, 1,608 feet
13	Central Refining Co.	Klinger, No. 10	436	{ Tracey McClosky Kirkwood-2	1, 500 1, 365 1, 425	15 47 25	1, 064 1, 129 989	436 372 511	..... 1, 585.....	...............	...............
14	Central Refining Co.	Klinger, No. 8	436	{ Bridgeport. do. "Gas"	868 890 1, 298	42 30 60	432 454 862	1, 068 046 638	870 905 1, 320	922 936 1, 362	...............
15	Central Refining Co.	Klinger, No. 9	436	{ "Gas" do. "Gas"	838 838 961	41 41 159	402 975 525	1, 098 840 .....	..... ..... .....	..... ..... .....	..... Salt water, 863 feet. Salt water, 961 feet.
16	Central Refining Co.	Klinger, No. 3	436	{ Bridgeport and Buchanan "Gas" do. "Gas"	1, 245 1, 312 820	32 45 20	809 876 384	691 624 1, 116	..... 1, 316 .....	..... ..... .....	..... Gas, 1,247 feet.
17	Central Refining Co.	Klinger, No. 1	436	{ Bridgeport. do. "Gas"	975 1, 295 1, 318	20 64 64	539 829 882	961 671 618	..... 1, 270.....	...............	...............
18	Central Refining Co.	Klinger, No. 2	436	{ Kirkwood Kirkwood Kirkwood	1, 880 1, 880 1, 885	33 33 33	949 551 1, 390	880 880 1, 421	...............	...............	...............
19	Central Refining Co.	Klinger, No. 4	436	{ Bridgeport. Klinger, No. 6 Klinger, No. 13	1, 359 1, 580 1, 570	10 15 4	924 1, 145 1, 335	576 359 1, 570	..... 1, 605 .....	..... 60.....	...............
20	Central Refining Co.	Klinger, No. 13	436	{ McClosky do. "Gas"	1, 604 1, 573 1, 300	14 34 8	1, 169 1, 138 866	331 1, 604 634	1, 618	125 200	Production increased to 200 bbls, the 2d day
21	Central Refining Co.	Klinger, No. 23	436	{ McClosky do. "Gas"	1, 588 1, 588 1, 588	26 26 26	1, 154 1, 154 1, 154	346 346 346	1, 595 1, 595 1, 595	1, 230 1, 230 1, 230	Production increased to 1,320 bbls, 2d day
22	Central Refining Co.	Klinger, No. 39	436	{ McClosky do. "Gas"	1, 339 1, 592 1, 595	11 8 5	905 1, 158 1, 160	595 342 340	..... 1, 698 1, 616	..... Dry 25	...............

N. W.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. W.	7	Ohio.....	Perry King, No. 27.....	434	Bridgeport.....	898	47	464	1,036	898	933	90	Well abandoned.
	8	Ohio.....	Perry King, No. 31.....	434	McClosky-1.....	1,565	20	1,131	369	1,592	1,615	250	
	9	Ohio.....	Perry King, No. 20.....	434	McClosky-2.....	1,590	22	1,556	344	1,592	1,615		
	10	Ohio.....	Perry King, No. 29.....	434	"Gas".....	1,290	11	856	644	1,290	1,359	65	Flowing well. Production 2d day, 2,000 bbls.
	11	Ohio.....	Perry King, No. 22.....	435	Kirkwood.....	1,329	17	895	605	1,325	1,359		
	12	Ohio.....	Perry King, No. 18.....	435	McClosky.....	1,565	47	1,131	369	1,575	1,615		
	13	Ohio.....	Perry King, No. 12.....	435	Kirkwood-1.....	1,327	5	892	608				
	14	Ohio.....	A. Applegate, No. 2.....	435	Kirkwood-2.....	1,349	11	914	586	1,349	1,362	60	
	15	Ohio.....	A. Applegate, No. 5.....	435	"Gas".....	1,312	37	876	624	1,312	1,349	50	
	16	Ohio.....	A. Applegate, No. 7.....	435	Kirkwood.....	1,268	20	832	668			25	
	17	Ohio.....	A. Applegate, No. 9.....	435	"Gas".....	1,342	40	906	594	1,342	1,348		
	18	Ohio.....	A. Applegate, No. 17.....	435	Stray.....	1,275	5	840	660			60	
	S. W.	19	Ohio.....	A. Applegate, No. 2.....	435	Kirkwood.....	1,292	18	857	643	1,292		10
20		Ohio.....	A. Applegate, No. 5.....	433	Kirkwood-1.....	1,350	30	915	585	1,360			
21		Ohio.....	A. Applegate, No. 7.....	435	Kirkwood-2.....	1,400	13	967	533	1,413			Gas, 1,455 feet.
22		Ohio.....	A. Applegate, No. 9.....	434	Tracey.....	1,455		1,050	450				Gas, 1,515 feet.
23		Ohio.....	A. Applegate, No. 17.....	435	McClosky.....	1,600	20	1,165	335	1,600	1,620	1,200	
24		Ohio.....	A. Applegate, No. 8.....	434	Tracey.....	1,515	67	1,081	419	1,608	1,665	175	
25		Ohio.....	A. Applegate, No. 14.....	433	McClosky.....	1,598	75	515	985	1,608	1,665	35	
26		Ohio.....	A. Applegate, No. 20.....	435	Bridgeport.....	1,395	15	960	540	1,395	1,591		
27		Ohio.....	A. Applegate, No. 5.....	434	Kirkwood-2.....	1,320	10	886	614				
28		Ohio.....	A. Applegate, No. 11.....	433	Kirkwood.....	1,500		1,066	434				
29		Ohio.....	A. Applegate, No. 18.....	433	Stray.....	1,597	23	1,163	337	1,597	1,620	1,400	
30		Ohio.....	A. Applegate, No. 25.....	433	McClosky.....	1,355	21	922	578	1,355	1,368	30	
31		Ohio.....	A. Applegate, No. 32.....	434	Kirkwood.....	1,313	22	1,079	421	1,313		125	Gas, 1,513 feet.
32	Ohio.....	A. Applegate, No. 39.....	435	Tracey.....	1,312	45	877	623	1,312	1,357	60		
33	Ohio.....	A. Applegate, No. 46.....	433	Kirkwood.....	1,226		792	708				Gas, 1,231 feet.	
34	Ohio.....	A. Applegate, No. 53.....	434	"Gas".....	1,298		864	636			60	Gas, 1,298 feet.	

S. E.	1 Ohio.	Perry King, No. 2.	436	{ "Gas"	1, 228	792	708	1, 237	90	Gas, 1, 228 feet.
	2 Ohio.	Perry King, No. 4.	437	{ "Gas"	1, 235	859	641	1, 237	75	Gas, 1, 230 feet.
	3 Ohio.	Perry King, No. 15.	437	{ "Gas"	1, 230	803	707	1, 302	60	Gas.
	4 Ohio.	Perry King, No. 1.	437	{ "Gas"	1, 291	854	646	1, 302	145	Salt water, 850 feet.
	5 Ohio.	Perry King, No. 36.	437	{ Bridgeport.	1, 249	812	688	1, 231	2	Well abandoned.
	6 Ohio.	Perry King, No. 35.	437	{ "Gas"	1, 289	852	648	1, 319	135	Gas, 1, 269 feet.
	7 Ohio.	Perry King, No. 25.	436	{ "Gas"	1, 269	833	667	1, 347	100	Drilling.
	8 Ohio.	Perry King, No. 43.	437	{ "Gas"	1, 300	864	636	1, 402	125	Gas.
	9 Ohio.	Perry King, No. 23.	436	{ "Gas"	1, 300	864	636	1, 402	65	Gas, 1, 247 feet.
	10 Ohio.	Perry King, No. 19.	436	{ "Gas"	1, 325	889	611	1, 325	25	Well abandoned.
	11 Ohio.	J. Bolles, No. 2.	436	{ "Gas"	1, 350	914	586	1, 400	135	Gas.
	12 Ohio.	J. Bolles, No. 4.	436	{ "Gas"	1, 322	886	614	1, 322	75	Gas, 1, 242 feet.
	13 Ohio.	M. Ridgely, No. 1.	436	{ "Gas"	1, 255	848	632	1, 416	25	Gas.
	14 Ohio.	W. Westall, No. 7.	436	{ "Gas"	1, 318	881	619	1, 318	65	Gas.
	15 Ohio.	W. Westall, No. 6.	437	{ "Gas"	1, 318	881	619	1, 318	75	Gas.
	16 Ohio.	W. Westall, No. 2.	437	{ "Gas"	1, 242	805	695	1, 333	25	Gas, 1, 242 feet.
	1 Ohio.	Hazel, No. 21.	438	{ "Gas"	1, 302	865	635	1, 333	25	Gas.
	2 Ohio.	Hazel, No. 19.	438	{ "Gas"	1, 306	863	632	1, 335	80	Gas.
	3 Ohio.	Hazel, No. 15.	438	{ "Gas"	1, 298	860	640	1, 325	75	Gas.
	4 Ohio.	Hazel, No. 6.	439	{ "Gas"	1, 325	887	613	1, 325	80	Gas.
	5 Ohio.	Hazel, No. 5.	439	{ "Gas"	926	492	1, 008	937	20	Gas.
	6 Ohio.	Hazel, No. 16.	438	{ "Gas"	1, 243	805	695	1, 337	75	Gas.
	7 Ohio.	Hazel, No. 4.	433	{ "Gas"	1, 286	848	632	1, 286	80	Gas.
	8 Ohio.	Hazel, No. 17.	427	{ "Gas"	1, 860	427	1, 073	910	130	Gas.
	9 Ohio.	Hazel, No. 12.	434	{ "Gas"	908	475	1, 025	910	70	Gas.
	10 Ohio.	Hazel, No. 22.	435	{ "Gas"	1, 275	848	632	1, 332	70	Gas.
	11 Ohio.	Hazel, No. 10.	436	{ "Gas"	885	451	1, 040	947	70	Gas.
	12 Ohio.	Hazel, No. 20.	436	{ "Gas"	946	312	988	947	70	Gas.
	13 Ohio.	Hazel, No. 8.	435	{ "Gas"	1, 253	858	642	1, 335	70	Gas.
	14 Ohio.	Hazel, No. 7.	434	{ "Gas"	1, 557	1, 122	378	1, 642	10	Gas, 1, 557 feet.
	1 Bridgeport.	Cooper, No. 1.	433	{ "Gas"	1, 615	1, 180	320	1, 615	140	Gas, 1, 255 feet.
				{ "Gas"	1, 250	814	686	1, 313	140	Gas.
				{ "Gas"	1, 253	837	653	1, 313	140	Gas.
				{ "Gas"	1, 227	792	708	1, 297	60	Gas, 1, 245 feet.
				{ "Gas"	1, 257	852	648	1, 297	25	Gas, 1, 245 feet.
				{ "Gas"	1, 227	793	707	1, 301	25	Gas, 1, 245 feet.
				{ "Gas"	1, 295	861	639	1, 301	30	Gas, 1, 245 feet.
				{ "Gas"	1, 295	862	638	1, 295	30	Gas, 1, 245 feet.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
19— N. W.	2	Bridgeport.....	Cooper, No. 9.....	433 {	Kirkwood-1.....	1,298	12	865	635	1,298	.....	.....	.....
					Kirkwood-2.....	1,320	13	887	613	1,320	.....	.....	.....
					Kirkwood-3.....	1,355	20	922	578	1,355	.....	.....	.....
	3	Bridgeport.....	Cooper, No. 6.....	433 {	Tracey.....	1,485	75	1,052	448	.....	1,500	Gas 3,000,000 cu. ft. gas daily from 1,510 to 1,560 feet..	.....
					Kirkwood-1.....	1,319	34	886	614	1,320	.....	15	.....
					Kirkwood-2.....	1,375	10	942	558	.....	.....	.....	.....
	4	Bridgeport.....	Cooper, No. 11.....	433 {	Tracey.....	1,515	81	1,082	418	1,571	.....	.....	.....
					Stray.....	1,596	9	1,163	337	1,596	.....	.....	.....
					McClosky.....	1,612	29	1,179	321	1,612	.....	.....	.....
	5	Bridgeport.....	Cooper, No. 4.....	437 {	Kirkwood.....	1,298	102	861	639	1,315	1,641	80	3,000,000 cu. ft. gas daily from 1,515 to 1,565 feet..
					do.....	1,314	.....	878	622	1,388	1,400	17	Quit in sand.....
					Tracey.....	1,475	.....	1,039	461	1,320	.....	.....	.....
	6	Bridgeport.....	Cooper, No. 3.....	436 {	.....	.....	.....	.....	.....	.....	.....	.....	.....
				
				
	7	Bridgeport.....	Cooper, No. 2.....	437 {	Kirkwood.....	1,310	58	873	627	1,335	1,444	25	Gas 7,500,000 cu. ft. gas daily from 1,515 feet, 650 pounds rock pressure..
					"Gas".....	1,280	14	854	646	1,358	.....	.....	.....
					Kirkwood-1.....	1,326	30	900	600	.....	.....	Show	.....
	8	Bridgeport.....	Cooper, No. 8.....	426 {	Kirkwood-1.....	1,370	15	944	556	1,375	.....	.....	.....
					Kirkwood-2.....	1,370	15	944	556	.....	.....	.....	.....
					Tracey-1.....	1,475	35	1,049	451	.....	.....	.....	1,000,000 cubic feet gas daily from 1,475 to 1,510 feet..
	9	Bridgeport.....	Cooper, No. 5.....	436 {	Tracey-2.....	1,565	10	1,139	361	1,570	.....	.....	.....
					McClosky.....	1,581	38	1,155	345	1,602	1,619	70	.....
					Kirkwood-1.....	1,360	42	924	576	1,615	.....	.....	Sand broken, 1,371 to 1,388 feet.....
		Bridgeport.....		436 {	Kirkwood-2.....	1,405	10	969	531	1,405	.....	.....	.....
					Kirkwood-2.....	1,405	10	969	531	1,405	.....	.....	.....
					Kirkwood-3.....	1,418	4	982	518	1,422	.....	.....	Well abandoned.....

Well abandoned.	No re-							
cord.								
40 Bridgeport.....	Cooper, No. 12.....	435	Bridgeport. do. Buchanan Stray "Gas" do. Kirkwood-1. Kirkwood-2. "Gas" Kirkwood-1. Kirkwood-2. "Gas" Kirkwood Kirkwood "Gas" Kirkwood McGlosky Kirkwood-1 Kirkwood-2 Stray Kirkwood do. Tracey Tracey McGlosky Kirkwood do. McGlosky Kirkwood Tracey McGlosky Kirkwood do. do. Bridgeport. Kirkwood-1. Kirkwood-2 Tracey McGlosky Kirkwood-1 Kirkwood-2 Kirkwood do. do. Berkshire Lot, No. 1 Berkshire, No. 1 Berkshire, No. 4 Berkshire, No. 5 Berkshire, No. 3 Berkshire, No. 6 Berkshire, No. 7	880 990 1,080 1,191 1,314 1,297 1,375 1,406 1,260 1,330 1,365 1,200 1,355 1,285 1,298 1,587 1,327 1,311 1,345 1,455 1,340 1,391 1,518 1,400 1,512 1,600 1,375 1,371 1,600 1,385 1,521 1,636 1,374 1,418 1,420 1,795 1,444 1,477 1,593 1,726 1,391 1,347 1,377 1,343 1,343 1,338 1,309 1,352 1,323 1,323	32 30 98 29 23 23 21 12 15 30 20 15 47 29 68 17 35 7 15 45 29 65 7 20 10 11 18 20 5 22 24 205 26 16 28 6 15 12 30 30 40 34 39 36 36	445 555 945 756 879 870 948 979 834 904 939 800 925 891 894 894 913 933 908 951 959 422 526 414 326 549 553 321 368 432 317 573 551 418 554 321 179 530 497 381 232 568 902 932 568 899 911 589 628 872 895 605 882 593 907	1,055 1,395 1,447 1,297 1,385 1,428 1,275 1,340 1,295 1,365 1,402 1,402 1,533 1,587 1,327 1,362 1,345 1,533 1,340 1,410 1,533 1,600 1,380 1,618 1,688 1,380 1,558 1,420 1,418 1,444 1,734 1,404 1,389 1,343 1,343 1,340 1,343 1,309 1,363 1,359 1,339 1,359	150 Gas, 1,587 feet. 45 2 Gas. 120 Gas, 1,515 feet. Gas, 1,512 to 1,515 feet. 50 25 10 Gas, 1,521 feet. 7 150 10 30 Light Gas sand. 40 Quit in hard line.

S. W.:—

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.						Name.	Oil depth—feet.			Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.								
19— S. W.	19	Ohio.	Berkshire, No. 2.	422 {	1,262	—	—	840	—	660	—	—	—	—	—	—	Gas, 1,265 feet.
	20	Ohio.	Willey, No. 8.	435 {	1,400	—	—	978	—	522	—	—	—	—	—	—	Salt water.
	21	Ohio.	Willey, No. 2.	434 {	1,324	10	—	889	611	1,324	1,324	1,444	135	70	Well abandoned.		
	22	Ohio.	Willey, No. 6.	427 {	1,955	22	—	521	979	960	1,313	1,355	50	—	—	—	—
	23	Ohio.	Willey, No. 4.	436 {	1,313	20	—	886	714	1,313	1,302	1,307	130	—	—	—	—
	24	Ohio.	Willey, No. 3.	435 {	1,302	31	—	866	634	1,033	907	1,353	50	—	—	—	—
S. E.	25	Ohio.	Willey, No. 7.	441 {	1,307	36	—	866	634	1,033	907	1,353	50	—	—	—	—
	26	Ohio.	Willey, No. 1.	440 {	860	30	—	420	1,080	634	1,307	1,353	200	—	—	—	—
	27	Ohio.	Willey, No. 5.	442 {	825	25	—	483	1,017	933	—	—	—	—	—	—	—
	1	Silurian.	Crump (40), No. 1.	444 {	1,325	13	—	383	1,117	—	—	—	—	—	—	—	—
	2	Silurian.	Crump (40), No. 11.	444 {	831	30	—	883	617	1,331	—	—	75	—	—	—	Quit in sand.
	3	Silurian.	Crump (40), No. 13.	445 {	815	104	—	371	1,113	935	—	—	—	—	—	—	Salt water, 936 feet.
	4	Silurian.	Crump (40), No. 9.	436 {	1,230	191	—	371	1,129	—	—	—	—	—	—	—	Gas, 1,230 feet.
	5	Silurian.	Crump (40), No. 17.	440 {	1,250	4	—	806	694	—	—	—	—	—	—	—	—
	6	Silurian.	Crump (40), No. 16.	440 {	1,301	44	—	857	643	1,313	1,347	150	—	—	—	—	—
	7	Silurian.	Crump (40), No. 15.	436 {	917	20	—	472	1,028	909	—	—	—	—	—	—	Salt water, 972 to 1,140 feet.
	8	Silurian.	Crump (40), No. 6.	440 {	860	34	—	468	1,032	909	—	—	—	—	—	—	Red rock, 1,260 to 1,272 feet.
	9	Silurian.	Crump (40), No. 14.	440 {	1,282	33	—	842	658	—	—	—	—	—	—	—	—
10	Silurian.	Crump (40), No. 10.	440 {	865	30	—	425	1,075	—	—	—	—	—	—	—	—	
11	Silurian.	Crump (40), No. 12.	440 {	980	120	—	540	960	—	—	—	—	—	—	—	—	
12	Silurian.	Crump (40), No. 11.	440 {	1,281	31	—	841	659	—	—	—	—	—	—	—	—	
13	Silurian.	Crump (40), No. 7.	440 {	1,420	10	—	980	520	—	—	—	—	—	—	—	—	
14	Silurian.	Crump (40), No. 8.	440 {	907	13	—	475	1,025	907	920	100	—	—	—	—	—	
15	Silurian.	Crump (40), No. 9.	440 {	877	19	—	451	1,049	—	—	—	—	—	—	—	—	

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
19— S. E....	34 Ohio.....	Lathrop, No. 1.....	432	{	Bridgeport.....	805	20	373	1,127	885			
	35 Bridgeport.....	Miller, No. 1.....	453		do.....	867	13	435	1,065				Quit in sand.
					do.....	883	61	430	1,070	944			
				{	do.....	815	27	363	1,137			Show	
					do.....	875	25	423	1,077				
					do.....	905	20	453	1,047				
	36 Bridgeport.....	Miller, No. 15.....	452	{	do.....	980	15	528	972				
					do.....	1,013	90	561	939				
					Buchanan.....	1,013	90	561	939				
	37 Bridgeport.....	Miller, No. 3.....	452	{	Kirkwood.....	1,280	40	828	672	1,288	1,345		
20— N. E....					do.....	785	32	468	1,032		1,952	250	
					do.....	920	36	486	1,014				
				{	do.....	958	5	524	976				
	38 Bridgeport.....	Miller, No. 9.....	434		Buchanan.....	968	142	534	966				
					"Gas".....	1,205	3	771	729				Red rock, 1,120 and 1,255 feet.
				{	Kirkwood.....	1,265	40	831	669		1,314		No record.
	39 Bridgeport.....	Miller, No. 7.....	434		do.....	819		382	1,118				
	40 Bridgeport.....	Miller, No. 10.....	437		do.....	903	40	468	1,032			20	
				{	do.....	950		513	987	963			
	41 Bridgeport.....	Miller, No. 11.....	440		do.....	819		379	1,121				
20— N. E....					do.....	878	22	438	1,062	885			
	42 Bridgeport.....	Miller, No. 16.....	442	{	do.....	910	29	470	1,030	912	939	165	
	43 Bridgeport.....	Miller, No. 2.....	453		do.....	780	47	428	1,072				
					do.....	921	13	468	1,032	875	934	250	
	1 Ohio.....	Hostettler, No. 2.....	425	{	Kirkwood.....	1,425	19	1,000	500	1,425	1,444	60	
	2 Ohio.....	Hostettler, No. 3.....	436		Tracey.....	1,580	4	1,144	356		1,703	Dry	
	3 Ohio.....	Hostettler, No. 1.....	435		do.....						1,000	No record	
	4 Ohio.....	Hostettler, No. 4.....	435	{	Kirkwood.....	1,489	21	1,054	446		1,489	75	
	1 Ohio.....	Skiles, No. 2.....	427		do.....	1,411	27	984	516		1,411	50	Quit in sand.

2 Ohio.....	Skiles, No. 8.....	433	"Gas".....	1,345	18	912	588	1,345	1,428	25	.....
3 Ohio.....	Skiles, No. 3.....	436	Kirkwood.....	1,392	26	956	544	1,392	1,418	45	.....
4 Ohio.....	Skiles, No. 5.....	437	Bridgeport.....	1,922	31	485	1,015	1,922	953	100	.....
5 Ohio.....	Skiles, No. 1.....	442	Kirkwood-1.....	1,294	4	852	648	.....	.....	30	.....
6 Ohio.....	Skiles, No. 6.....	427	Kirkwood-2.....	1,313	41	871	629	1,313	.....	.....	.....
			Kirkwood-1.....	1,350	12	923	577	.....	.....	.....	.....
			Kirkwood-2.....	1,431	15	1,004	496	1,431	1,453	100	.....
			Bridgeport.....	826	40	399	1,101	.....	.....	.....	.....
			do.....	871	59	444	1,056	.....	.....	.....	Salt water, 998 feet.
			do.....	955	105	528	972	.....	.....	.....	Salt water.
			do.....	1,080	5	653	847	.....	.....	.....	.....
			Buchanan.....	1,130	68	703	797	.....	.....	.....	.....
7 Bridgeport.....	M. Wood, No. 11.....	427	Stray.....	1,232	9	805	695	.....	.....	.....	.....
			"Gas".....	1,335	13	908	592	.....	.....	.....	.....
			Kirkwood-1.....	1,397	10	970	530	1,406	.....	.....	.....
			Kirkwood-2.....	1,433	17	1,006	494	1,445	.....	.....	.....
			Tracey.....	1,470	25	1,043	457	1,475	1,505	.....	.....
			Bridgeport.....	785	15	357	1,143	.....	.....	.....	.....
			do.....	840	10	412	1,088	.....	.....	.....	.....
			do.....	870	27	442	1,058	.....	.....	.....	Salt water, 980 feet.
			do.....	930	113	502	998	.....	.....	.....	Salt water, 1,148 feet.
8 Bridgeport.....	M. Wood, No. 12.....	428	Buchanan.....	1,105	82	677	823	.....	.....	.....	.....
			Stray.....	1,211	13	753	717	.....	.....	.....	.....
			Kirkwood-1.....	1,388	3	960	540	.....	.....	.....	.....
			Kirkwood-2.....	1,394	26	966	534	1,394	.....	Show	.....
			Stray.....	1,435	8	1,007	493	1,437	.....	.....	.....
			Tracey.....	1,462	28	1,034	466	1,462	1,498	.....	.....
9 Bridgeport.....	M. Wood, No. 7.....	430	Bridgeport.....	825	.....	390	1,110	.....	.....	Dry	No record.
			do.....	915	110	480	1,020	930	.....	.....	Salt water, 985 feet.
			Buchanan.....	1,110	40	675	825	.....	.....	.....	.....
10 Bridgeport.....	M. Wood, No. 10.....	435	"Gas".....	1,285	18	850	650	.....	.....	.....	.....
			Kirkwood.....	1,333	72	898	602	.....	1,408	.....	.....
11 Bridgeport.....	M. Wood, No. 4.....	440	Kirkwood-1.....	1,312	15	872	628	.....	.....	.....	Slate, 1,327 to 1,329 feet.
12 Bridgeport.....	M. Wood, No. 5.....	439	Kirkwood-2.....	1,329	13	889	611	.....	.....	.....	.....
13 Bridgeport.....	M. Wood, No. 2.....	430	Kirkwood.....	1,296	51	857	643	.....	1,347	.....	.....
14 Bridgeport.....	M. Wood, No. 9.....	430	.....	.....	.....	.....	.....	.....	.....	No record.	.....
15 Bridgeport.....	M. Wood, No. 1.....	428	.....	.....	.....	.....	.....	.....	.....	No record.	.....
16 Bridgeport.....	M. Wood, No. 3.....	422	.....	1,279	54	849	651	1,352	1,341	.....	No record.
17 Bridgeport.....	M. Wood, No. 8.....	431	Stray.....	1,433	20	1,002	498	.....	1,459	.....	do.
18 Bridgeport.....	M. Wood, No. 6.....	435	Bridgeport.....	910	.....	475	1,025	.....	.....	.....	Red rock, 1,300, 1,360 and 1,423 feet.
			do.....	875	30	445	1,055	.....	940	.....	.....
			do.....	1,000	75	570	930	.....	.....	.....	.....
			Buchanan.....	1,130	100	700	800	.....	.....	.....	.....
			"Gas".....	1,275	19	845	655	.....	.....	.....	.....
			Kirkwood.....	1,380	10	950	550	.....	.....	.....	.....
			Tracey.....	1,390	15	1,160	340	.....	.....	.....	.....
			McClusky-1.....	1,670	12	1,240	260	.....	.....	.....	.....
19 Bridgeport.....	M. Wood, No. 13.....	430	McClusky-2.....	1,698	71	1,268	232	.....	1,705	.....	Salt water.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company	Name of well.	Sur-face elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
20— S. W.	1	Bridgeport.	Lewis, No. 9.	426	Bridgeport.	877	30	451	1,049	.....	933	250	Slate, 892 to 899 feet.
	2	Bridgeport.	Lewis, No. 13.	426	do.	915	18	489	1,011	.....	.....	.....	Quit in sand.
	3	Bridgeport.	Lewis, No. 1.	426	Kirkwood.	800	34	374	1,126	.....	.....	.....	Gas, 1,305 feet.
	4	Bridgeport.	Lewis, No. 12.	422	Bridgeport.	1,279	56	853	647	1,319	.....	.....	.....
	5	Bridgeport.	Lewis, No. 4.	420	do.	816	20	390	1,110	.....	891	.....	.....
	6	Bridgeport.	Lewis, No. 3.	424	do.	866	20	440	1,060	.....	.....	.....	.....
	7	Bridgeport.	Lewis, No. 20.	424	do.	880	27	458	1,042	.....	.....	.....	.....
	8	Bridgeport.	Lewis, No. 19.	440	do.	913	20	491	1,009	.....	300	.....	Salt water.
	9	Bridgeport.	Lewis, No. 5.	440	do.	868	.....	546	954	.....	.....	.....	.....
	10	Bridgeport.	Lewis, No. 18.	440	do.	877	18	457	1,043	.....	895	.....	.....
	11	Bridgeport.	Lewis, No. 6.	440	do.	872	12	448	1,052	.....	884	.....	.....
					do.	867	68	443	1,057	.....	935	.....	.....
					do.	786	22	346	1,154	.....	.....	.....	.....
					do.	810	25	370	1,130	.....	.....	.....	.....
					do.	867	28	427	1,073	.....	50	.....	.....
					do.	898	82	458	1,042	.....	.....	.....	.....
					do.	1,004	23	564	936	.....	.....	.....	.....
					Buchanan.	1,031	99	591	909	.....	.....	.....	Salt water, 1,070 feet.
					Stray.	1,159	719	781	.....	.....	.....	.....	.....
					Kirkwood-1	1,322	11	882	618	.....	.....	.....	.....
					Kirkwood-2	1,335	2	895	605	1,328	.....	.....	.....
					Kirkwood-3	1,350	26	910	590	.....	.....	.....	.....
					Bridgeport.	917	25	477	1,023	.....	1,306	250	.....
					do.	835	.....	395	1,105	.....	.....	.....	.....
					do.	895	85	455	1,043	.....	895	.....	.....
					Buchanan-1.	1,017	113	577	923	.....	.....	.....	.....
					Buchanan-2.	1,150	13	710	790	.....	.....	.....	Salt water, 1,020 feet.
					Kirkwood-1.	1,320	16	880	620	1,325	.....	.....	.....
					Kirkwood-2.	1,341	24	901	599	.....	1,383	.....	.....
					Bridgeport.	892	14	452	1,048	.....	.....	.....	.....
					do.	908	23	468	1,032	.....	931	.....	Quit in sand.

[illegible]

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.			
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.								
S. W..	31	E. N. Gillespie.	Smith, No. 23.	430	Bridgeport.	837	10	407	1,093							Hole full of water, 837 feet	
					do.	900	74	470	1,030						Show		
					Kirkwood-1.	1,378	40	948	552	1,378							
					Kirkwood-2.	1,445	16	1,015	485	1,445	1,473	130					
	32	E. N. Gillespie.	Smith, No. 2.	441	Bridgeport.	891	10	450	1,050	893						No record.	
					do.	915	32	474	1,026	920							
	33	E. N. Gillespie.	Smith, No. 14.	441	Bridgeport.	875	20	434	1,066	881						No record.	
					do.	920	14	479	1,021	925							
	34	E. N. Gillespie.	Smith, No. 1.	441	do.	890	12	449	1,051							375	
					do.	930	55	489	1,011	930							
35	E. N. Gillespie.	Smith, No. 18.	441	Buchanan.	1,046	38	605	895							Salt water, 1,090 feet.		
				Kirkwood-1.	1,342	2	901	599						Show			
36	E. N. Gillespie.	Smith, No. 4.	451	Kirkwood-2.	1,360	33	919	581								Red shale, 1,325 feet.	
				Bridgeport.	887	21	436	1,064	890						1,427		
				do.	925	45	474	1,026									
				do.	884	12	433	1,027									
37	E. N. Gillespie.	Smith, No. 12.	451	do.	926	21	475	1,025							Salt water, 953 and 1,140 feet.		
				do.	953		502	598									
38	E. N. Gillespie.	Smith, No. 9.	445	Kirkwood.	1,332	56	881	619							282	Red rock, 1,318 feet.	
				Bridgeport.	882	22	437	1,063	882								1,388
				do.	912	69	467	1,033	912								
				"Gas".	1,250	18	805	695									
39	E. N. Gillespie.	Smith, No. 3.	445	Kirkwood-1.	1,290	32	845	655							116	Red shale, 1,173 feet.	
				Kirkwood-2.	1,326	25	881	619						1,351			
				Bridgeport.	871	12	426	1,074	873								
				do.	909	17	464	1,036	909								
40	E. N. Gillespie.	Smith, No. 15.	445	do.	885	12	440	860							982		
				do.	909	73	464	1,036									
41	E. N. Gillespie.	Smith, No. 5.	444	do.	866	7	422	1,078							422	1,078	
				do.	900	34	456	1,044									

42 E. N. Gillespie.....	Smith, No. 10.....	Bridgeport.....	865	7	423	1,077	Salt water.....	
		do.....	906	22	464	936		906
		do.....	933	20	491	909		
		do.....	972	23	530	970		
		do.....	1,000	40	538	942		
43 E. N. Gillespie.....	Smith, No. 6.....	Stray.....	1,160	8	718	782	55 Gas, 1,337 feet.....	
		Kirkwood.....	1,335	55	893	607		1,390
		Bridgeport.....	860	15	414	1,086		
		do.....	902	29	456	1,014		
		do.....	958	11	512	988		
44 E. N. Gillespie.....	Smith, No. 25.....	do.....	907	20	461	1,038	Show Show Salt water.....	
		do.....	934	76	488	1,012		934
		do.....	1,065	5	619	881		
		Stray.....	1,087	8	641	859		
		Buchanan.....	1,101	85	655	845		
45 E. N. Gillespie.....	Smith, No. 7.....	Kirkwood-1.....	1,347	44	901	599	240	
		Kirkwood-2.....	1,400	14	954	546		1,426
		Bridgeport.....	900	24	467	1,033		
		do.....	948	30	515	985		978
		do.....	907	46	474	1,026		
46 E. N. Gillespie.....	Smith, No. 16.....	Buchanan.....	1,000	110	657	843	Salt water.....	
		Kirkwood.....	1,364	64	931	569		1,428
		Bridgeport.....	912	23	482	1,018		912
		Bridgeport.....	1,396	96	473	1,027		
		Kirkwood.....	1,398	54	971	529		1,455
47 E. N. Gillespie.....	Smith, No. 11.....	Bridgeport.....	864	3	439	1,061	Well abandoned.....	
		do.....	931	33	506	994		940
		do.....	884	...	458	1,042		
		do.....	926	29	500	1,000		
		do.....	960	65	534	966		
48 E. N. Gillespie.....	Smith, No. 19.....	Buchanan.....	1,080	140	654	846	Salt water.....	
		Kirkwood.....	1,390	54	964	536		1,414
		Bridgeport.....	960	115	534	966		600
		Buchanan.....	1,150	67	724	776		
		Kirkwood.....	1,385	60	959	541		1,445
49 E. N. Gillespie.....	Smith, No. 20.....	Bridgeport.....	1,700	25	265	1,235	Salt water.....	
		do.....	976	99	541	959		
		Buchanan.....	1,170	86	735	765		...
		Kirkwood.....	1,437	38	1,002	498		1,465
		Tracy (?).....	1,483	56	1,048	452		
50 E. N. Gillespie.....	Smith, No. 13.....	Bridgeport.....	938	7	488	1,012	Salt water.....	
		do.....	978	113	528	972		
		Stray.....	1,411	5	961	539		
		Kirkwood.....	1,445	19	995	505		1,404
		Bridgeport.....	680	320	234	1,266		84
51 E. N. Gillespie.....	Smith, No. 21.....	Stray.....	1,435	3	989	511	Quit in sand.....	
		do.....	1,472	5	1,026	474		1,435
		do.....	1,474	38	1,038	462		1,544
		Kirkwood.....	1,481	...	...	...
			

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
22—													
S. E...	10	Ohio.....	Dickerson, No. 1.....	473	Kirkwood	1,506	14	1,033	467	1,700	1,743	25	Drilling.....
23—													
	11	Ohio.....	Dickerson, No. 2.....	471	McClosky.....	1,695	23	1,222	278				
					Bridgeport.....	800	50	370	1,130				Salt water, 850 feet.....
					do.....	1,010	100	580	920				Salt water, 1,010 feet.....
					Buchanan.....	1,165	225	735	765				Salt water, 1,375 feet.....
					Kirkwood-1.....	1,530	35	1,100	400				
N E..	1	Snowden Bros.....	Vanatta, No. 2.....	430	Kirkwood-2.....	1,600	18	1,170	330				Salt water and show of oil, 1,618 feet.....
					Tracey.....	1,740	25	1,310	190				
24—					McClosky.....	1,945		1,515	—15	1,945	2,590		Dry Light show of oil, 1,945 feet.....
					"Gas".....								
N E..	1	Ohio.....	Perry King, No. 42.....	434	Stray.....	1,307	28	873	627	1,307			
					Kirkwood.....	1,342	8	908	592				
	2	Ohio.....	Perry King, No. 17.....	436	"Gas".....	1,365	37	831	569	1,385	1,402	142	
	3	Ohio.....	Perry King, No. 9.....	451	do.....	1,319	98	883	617	1,302	1,418	40	
					Kirkwood.....	1,335	6	884	616				
					do.....	1,415	24	904	536	1,415		75	
	4	Ohio.....	Perry King, No. 8.....	452	Kirkwood-1.....	1,375	20	923	577	1,376			
					Kirkwood-2.....	1,435	15	833	517	1,440		75	
	1	Ohio.....	Perry King, No. 32.....	433	Kirkwood.....	1,497	20	1,064	436	1,497	1,549		
	2	Ohio.....	Douglas, No. 2.....	433	Kirkwood-1.....	1,502	22	1,097	403	1,503			
					do.....	1,530	22	1,057	443	1,535	1,552	100	Gas well. No gas data.....
	3	Ohio.....	Douglas, No. 3.....	438	Kirkwood-2.....	1,495	3	1,057	410				
					Tracey.....	1,528	12	1,090	273	1,665	1,679	30	
	4	Ohio.....	Douglas, No. 1.....	435	do.....	1,605	14	1,080	420	1,521	1,532	180	Gas, 1,515 feet.....
					"Gas".....	1,515	17	1,014	486	1,514			
	5	Ohio.....	Perry King, No. 10.....	435	do.....	1,449	5	1,014	486	1,449			
					Kirkwood.....	1,500	17	1,065	435	1,500		150	
	6	Ohio.....	Perry King, No. 13.....	429	do.....	1,513	22	1,084	416	1,513	1,550	125	Gas, 1,513 feet.....
	7	Ohio.....	Perry King, No. 45.....	442	do.....	1,516	23	1,074	426	1,516	1,569	120	

S. W.	1	Snowden Bros.	O. Judy, No. 1	430	Bridgeport and Buchanan	1, 020	275	580	920		No record.
	2	Snowden Bros.	Childress, No. 3	440	"Gas" Kirkwood Tracey McClosky	1, 440 1, 516 1, 666 1, 776	44 54 29 7	1, 000 1, 076 1, 226 1, 336	500 424 274 164	Show	Hole full of water, 1,020 feet.
S. E.	3	Snowden Bros.	Childress, No. 4	455	Kirkwood	1, 506	41	1, 048	452	1, 506	Salt water, 1,781 feet.
	4	Snowden Bros.	Childress, No. 5	445	Kirkwood	1, 516	12	1, 075	425	1, 553	Drilling.
	1	Ohio	Perry King, No. 46	458	McClosky	1, 684	8	1, 243	257	1, 687	do.
	2	Ohio	Perry King, No. 47	453	Kirkwood	1, 491	35	1, 047	453	1, 526	Drilling.
	3	Ohio	Perry King, No. 48	450	do.	1, 460	53	982	518	1, 485	do.
	4	Ohio	Perry King, No. 6	441	"Gas"	1, 354	46	871	629	1, 454	Drilling.
	5	Ohio	Perry King, No. 7	444	Kirkwood-1	1, 470	8	993	597		do.
	6	Ohio	Perry King, No. 3	478	Kirkwood-2	1, 500	6	1, 057	443	1, 500	T. 4 N., R. 13 W.
	7	Ohio	Perry King, No. 16	483	Kirkwood	1, 527	3	1, 084	416		150
25—	3	Snowden Bros.	Childress, No. 1	440	do.	1, 500	11	399	1, 101		No record.
N. E.	4	Snowden Bros.	Childress, No. 2	450	Bridgeport.	854	12	498	1, 002		No record.
	2	Snowden Bros.	Pepple, No. 2	477	do.	953	15	545	955		No record.
	3	Snowden Bros.	Pepple, No. 3	443	Bridgeport and Buchanan	1, 000	15	545	955		No record.
	3	Snowden Bros.	Pepple, No. 1	440	Buchanan	1, 035	151	580	920		Salt water, 1,035 and 1,163 feet.
	4	Snowden Bros.	Pepple, No. 2	450	"Gas" Stray	1, 240 1, 433	62 17	785 978	715 522		Salt water, 1,273 feet.
	5	Snowden Bros.	Pepple, No. 6	455	Kirkwood-1	1, 488	6	1, 033	467	1, 494	Show
					Kirkwood-2	1, 502	15	1, 047	453	1, 517	
					Kirkwood-3	1, 534	9	1, 079	421		
					Tracey	1, 588	5	1, 133	367		
					McClosky	1, 612	25	1, 157	343		
					do.	1, 684	39	1, 229	271	1, 648	
					Bridgeport.	790	35	513	187	1, 723	150
					do.	990	15	513	987		
					do.	1, 035	20	558	442		
					do.	1, 115	25	638	682		
					do.	1, 200	30	723	777		
					Buchanan-1	1, 250	25	773	727		
					Buchanan-2	1, 300	19	823	677		
					Stray	1, 355	17	878	692		Hole full water, 1,315 feet
					"Gas"	1, 445	10	968	532		
					Kirkwood-1	1, 500	20	1, 023	477	1, 516	
					Kirkwood-2	1, 530	371	1, 053	447	1, 567	Water and oil, 1,533 feet.
	6	Snowden Bros.	Pepple, No. 10	477							

N. W.	5 Ohio.....	Johnson, No. 3.....	430	McClosky.....	1,642	18	1,212	288	1,642	1,664	200
	6 Ohio.....	E. Martin, No. 2.....	427	do.....	1,645	5	1,218	282	1,642	1,664	Dry
	7 Ohio.....	E. Martin, No. 1.....	426	Tracey.....	1,476	45	1,049	351	1,521	1,521	Gas, 1,516 feet.
	8 Ohio.....	J. C. Martin, No. 1.....	440	Tracey-2.....	1,580	10	1,140	460	1,642	1,684	Gas, 1,638 feet.
	9 Ohio.....	J. C. Martin, No. 2.....	430	McClosky.....	1,640	2	1,210	290	1,642	1,681	Well abandoned.
	10 Ohio.....	Gowin, No. 1.....	430	Tracey.....	1,500	10	1,070	430	1,644	1,680	Gas, 1,500 feet.
	11 Ohio.....	Gowin, No. 3.....	440	do.....	1,644	20	1,214	286	1,644	1,680	25
	1 Mahutska.....	Gowin, No. 1.....	436	Tracey.....	1,649	13	1,209	291	1,655	1,665	Gas, 1,655 feet.
	2 Ohio.....	Gowin, No. 2.....	438	McClosky.....	1,637	30	1,069	431	1,642	1,667	20
	3 Ohio.....	Green, No. 2.....	438	do.....	1,634	18	1,196	304	1,634	1,657	50
	4 Ohio.....	Green, No. 1.....	440	Tracey.....	1,505	20	1,067	433	1,625	1,661	100
	1 Ohio.....	Nuttall, No. 1.....	434	do.....	1,625	25	1,187	313	1,625	1,658	Dry
S. W.	2 Ohio.....	Nuttall, No. 2.....	433	McClosky.....	1,503	45	1,069	431	1,613	1,658	Gas, 1,506 feet.
	3 Ohio.....	Nuttall, No. 4.....	437	McClosky.....	1,478	44	1,172	328	1,613	1,658	130
	4 Ohio.....	Nuttall, No. 3.....	437	Tracey.....	1,601	46	1,168	332	1,635	1,647	130
	5 Ohio.....	Mefford, No. 1.....	438	Tracey.....	1,510	22	1,073	427	1,615	1,633	Gas, 1,615 feet.
	6 Mahutska.....	W. Updike, No. 6.....	438	do.....	1,512	23	1,074	426	1,632	1,650	Gas, 1,510 feet.
	7 Mahutska.....	W. Updike, No. 1.....	438	McClosky.....	1,478	57	1,040	460	1,652	1,652	Gas, 1,512 feet.
	8 Mahutska.....	W. Updike, No. 3.....	438	Tracey.....	1,610	37	1,172	328	1,652	1,652	60
	9 Mahutska.....	W. Updike, No. 2.....	438	McClosky.....	1,520	10	1,082	418	1,670	1,670	Gas, 1,520 feet.
	10 Mahutska.....	W. Updike, No. 5.....	438	Tracey.....	1,617	16	1,179	321	1,652	1,654	50
	11 Ohio.....	Mefford No. 2.....	438	McClosky.....	1,616	32	1,178	322	1,652	1,654	20
	1 Ohio.....	S. Updike (10), No. 1.....	429	Tracey.....	1,493	32	1,055	445	1,645	1,645	1 Well abandoned.
	2 Haywood.....	S. Updike, No. 1.....	428	Tracey.....	1,603	39	1,173	327	1,656	1,656	50
S. E.	3 Haywood.....	S. Updike, No. 3.....	428	McClosky.....	1,507	8	1,069	431	1,618	1,636	Gas, 1,483 to 1,500 feet.
	4 Ohio.....	R. Shipman, No. 2.....	428	Tracey.....	1,613	45	1,165	335	1,622	1,670	60
	5 Ohio.....	R. Shipman, No. 1.....	428	do.....	1,622	17	1,175	325	1,657	1,674	75
	6 Ohio.....	Steffy, No. 1.....	426	do.....	1,630	13	1,193	310	1,635	1,674	150
	7 Ohio.....	Steffy, No. 2.....	426	Tracey.....	1,637	21	1,202	298	1,632	1,680	75
	8 Ohio.....	Johnson, No. 4.....	432	do.....	1,496	23	1,209	291	1,632	1,680	30
	9 Ohio.....	Johnson, No. 1.....	435	Tracey.....	1,616	27	1,188	432	1,651	1,651	Gas, 1,496 feet.
	10 Ohio.....	Johnson, No. 5.....	430	McClosky.....	1,496	39	1,070	330	1,625	1,665	105
	11 Haywood.....	S. Updike, No. 4.....	428	do.....	1,620	39	1,194	306	1,625	1,665	Gas, 1,496 feet.
	12 Haywood.....	S. Updike, No. 5.....	429	do.....	1,630	30	1,204	306	1,625	1,665	120
	13 Haywood.....	S. Updike, No. 2.....	429	do.....	1,645	20	1,208	292	1,640	1,663	80
	1 Ohio.....	M. Coder, No. 1.....	437	Tracey.....	1,568	14	1,131	369	1,568	1,582	60 T. 5 N., R. 13, W.
N. E.	2 Ohio.....	Kimmel, No. 1.....	437	do.....	1,572	18	1,135	365	1,572	1,600	15 Gas, 1,572 feet.
	3 Ohio.....	Rodrick, No. 1.....	438	do.....	1,543	17	1,105	395	1,543	1,562	25

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Name.					Sand.			Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.								
26— N. W. S. W.	1	Ohio.....	T. Smith, No. 1.....	438	Tracey.....	1,578	22	1,141	359	1,578	1,600	No record				
	1	Ohio.....	Armitage, No. 1.....	437	do.....	1,574	29	1,140	360	1,586	1,603	85	Gas, 1,585 feet.			
	2	Ohio.....	Armitage, No. 2.....	434	Kirkwood.....	1,500	30	1,065	435	1,586		35	Salt water.			
	3	Central Refining Co.....	G. Waggoner, No. 2.....	435	Tracey.....	1,564	26	1,129	371	1,570	1,591		Red rock, 1,555 feet.			
	4	Central Refining Co.....	G. Waggoner, No. 1.....	436	McClosky-1.....	1,579	12	1,143	357	1,570	1,622		Salt water, 1,622 feet.			
	5	Central Refining Co.....	Paddie, No. 1.....	436	McClosky-2.....	1,630	10	1,194	306	1,622			Salt water.			
S. E.					do.....	1,655	15	1,219	281	1,655		do.				
					Tracey.....	1,550	25	1,114	386	1,550		do.				
					Stray.....	1,584	11	1,148	352	1,584		do.				
					McClosky.....	1,598	37	1,162	338	1,598		Dry	Salt water, 1,598 feet.			
	1	Ohio.....	Kettleman, No. 3.....	437	Tracey.....	1,548	32	1,111	389	1,548	1,580	117	Gas, 1,548 feet.			
	2	Ohio.....	Kettleman, No. 2.....	435	do.....	1,562	20	1,127	373	1,562	1,582	105	Gas, 1,548 feet.			
29— N. E.	3	Ohio.....	Kettleman, No. 1.....	439	do.....	1,564	14	1,125	375	1,564	1,578	75	Gas, 1,557 feet.			
	4	Ohio.....	Kettleman, No. 4.....	436	do.....	1,557	20	1,121	379	1,560	1,577	37	Gas, 1,557 feet.			
	1	Silurian.....	Greenlee, No. 2.....	465	Bridgeport.....	900	50	435	1,075	900			Salt water.			
					Kirkwood.....	1,512	39	1,047	453	1,542		30	Gas, 1,542 feet. Red shale 1,365 feet.			
	2	Ohio.....	Greenlee, No. 1.....	476	Bridgeport.....	900	50	424	1,076	453			Red shale, 1,375 feet.			
					Kirkwood.....	1,523	52	1,047	453			40	Salt water, 719 feet.			
3					Bridgeport.....	710	55	260	1,240				Broken sand, 955 to 1,915 feet. Salt water, 1,015 to 1,025 feet.			
					do.....	912	33	462	1,038				Salt water.			
					do.....	955	70	505	995				Salt water.			
					do.....	1,040	33	590	910				Salt water.			
				Buchanan.....	1,175	100	725	775								
				"Gas".....	1,300	10	850	650								
				Kirkwood.....	1,468	37	1,018	482								

4	Bridgeport.....	Eshelman, No. 10.....	441	{ Bridgeport..... Kirkwood.....	950 1,420	110 49	509 979	991 521	966 1,430	1,469	Light Salt water, 983 feet. Quit in sand. First red rock, 1,363 feet.
5	Bridgeport.....	Eshelman, No. 15.....	438	{ Bridgeport..... Bridgeport and Buchanan..... Stray..... Kirkwood-1..... Kirkwood-2..... Kirkwood-3..... Bridgeport..... do..... do..... do.....	940 1,125 1,240 1,361 1,395 1,420 840 890 970	175 87 10 9 20 15 35 72 33	502 527 698 577 543 518 1,114 1,064 984	998 813 698 577 543 518 1,114 1,064 984	945	Show Salt water. Salt water, 1,145 feet.	
6	Bridgeport.....	Eshelman, No. 13.....	454	{ Buchanan..... "Gas"..... Stray..... Kirkwood..... Bridgeport..... Buchanan..... "Gas"..... Stray..... Kirkwood.....	1,038 1,055 1,175 1,392 1,425 1,465 1,060 1,200 1,395 1,429 1,470	7 584 40 601 115 10 938 562 48 1,011 894 746 754 10 941 975 525 1,016	584 601 721 779 529 520 894 606 894 746 754 10 941 975 525 1,016	916 896 779 529 520 894 606 894 746 754 10 941 975 525 1,016	1,480 1,513	Salt water, 1,038 feet.	
7	Bridgeport.....	Eshelman, No. 12.....	454	{ Buchanan..... "Gas"..... Stray..... Kirkwood.....	885 920 960 1,120 1,291 1,481 944 944	25 30 130 166 39 40 25 146	440 475 1,025 825 825 654 464 489 1,011	1,060 1,025 825 825 654 464 489 1,011	1,480 1,513	Dry Well abandoned. Quit in sand. Red rock, 1,320 and 1,382 feet.	
8	Silurian.....	Dalrymple, No. 5.....	445	{ Buchanan-1..... Buchanan-2..... Kirkwood..... Bridgeport..... do..... Stray..... "Gas"..... Stray..... Kirkwood-1..... Kirkwood-2.....	885 920 960 1,120 1,291 1,481 944 944 1,340 1,366 1,401 1,416 1,480	25 30 130 166 39 40 25 146 10 6 6 34 24	440 475 1,025 825 825 654 464 489 615 911 589 554 475	1,060 1,025 825 825 654 464 489 1,011 1,340 589 554 539 1,416 1,480	1,508	Red rock, 1,330 feet.	
9	Silurian.....	Dalrymple, No. 6.....	457	{ Buchanan-1..... Buchanan-2..... Kirkwood..... Bridgeport..... do..... Stray..... "Gas"..... Stray..... Kirkwood-1..... Kirkwood-2.....	885 920 960 1,120 1,291 1,481 944 944 1,340 1,366 1,401 1,416 1,480	25 30 130 166 39 40 25 146 10 6 6 34 24	440 475 1,025 825 825 654 464 489 615 911 589 554 475	1,060 1,025 825 825 654 464 489 1,011 1,340 589 554 539 1,416 1,480	1,508	Salt water, 960 feet. Red rock at 1,270 feet.	
10	Silurian.....	Dalrymple, No. 7.....	455	{ Buchanan-1..... Buchanan-2..... Kirkwood..... Bridgeport..... do..... Stray..... "Gas"..... Stray..... Kirkwood-1..... Kirkwood-2.....	885 920 960 1,120 1,291 1,481 944 944 1,340 1,366 1,401 1,416 1,480	25 30 130 166 39 40 25 146 10 6 6 34 24	440 475 1,025 825 825 654 464 489 615 911 589 554 475	1,060 1,025 825 825 654 464 489 1,011 1,340 589 554 539 1,416 1,480	1,508	Salt water, 960 feet. Red rock at 1,270 feet.	
11	Silurian.....	Dalrymple, No. 9.....	442	{ Buchanan-1..... Buchanan-2..... Kirkwood..... Bridgeport..... do..... Stray..... "Gas"..... Stray..... Kirkwood-1..... Kirkwood-2.....	885 920 960 1,120 1,291 1,481 944 944 1,340 1,366 1,401 1,416 1,480	25 30 130 166 39 40 25 146 10 6 6 34 24	440 475 1,025 825 825 654 464 489 615 911 589 554 475	1,060 1,025 825 825 654 464 489 1,011 1,340 589 554 539 1,416 1,480	1,508	Drilling.	
12	Silurian.....	Dalrymple, No. 8.....	457	{ Buchanan-1..... Buchanan-2..... Kirkwood..... Bridgeport..... do..... Stray..... "Gas"..... Stray..... Kirkwood-1..... Kirkwood-2.....	885 920 960 1,120 1,291 1,481 944 944 1,340 1,366 1,401 1,416 1,480	25 30 130 166 39 40 25 146 10 6 6 34 24	440 475 1,025 825 825 654 464 489 615 911 589 554 475	1,060 1,025 825 825 654 464 489 1,011 1,340 589 554 539 1,416 1,480	1,508	Red shale, 1,220 feet.	
13	Silurian.....	Dalrymple, No. 1.....	456	{ Buchanan..... "Gas"..... Kirkwood.....	1,136 1,291 1,352	39 31 10	880 820 896	820 665 604	1,291 1,364	Originally a flowing well.	

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
29— N. E..	14	Silurian.	Dalrymple, No. 2.	470	Bridgeport.	880	20	410	1,090				
					do.	930	15	460	1,040		Show		
					do.	970	30	500	1,000			Salt water.	
					do.	1,030	30	560	940			Red rock, 1,260 feet.	
					Stray.	1,245	10	775	725				
					"Gas".	1,302	15	832	668				
					Stray.	1,360	15	890	610		Show		
					Kirkwood.	1,396	48	926	574	1,396			
					do.	730	20	243	1,257				
					do.	890	20	403	1,097				
15	Silurian.	Dalrymple, No. 4.	487	Buchanan.	1,150	60	663	837			Show	Salt water.	
				"Gas".	1,390	5	903	597	1,390		Salt water.		
				Kirkwood-1.	1,450	15	963	537			Salt water.		
				Kirkwood-2.	1,471	24	984	516			Red rock, 1,280 feet.		
				Bridgeport.	780	20	280	1,220		50			
				do.	985	20	485	1,015			Salt water.		
				do.	1,050	125	550	950			Salt water, 1,050 feet.		
				Buchanan.	1,230	145	730	770			Red rock, 1,360 feet.		
				"Gas".	1,442	8	942	558	1,442				
				Kirkwood.	1,500	35	1,000	500		Show			
N. W..	1	Bridgeport.	Eshelman, No. 11.	426	Bridgeport.	900	39	474	1,026	959	130		
					do.	898	110	470	1,030	905		Salt water, 970 feet.	
					do.	1,303	18	875	625			Red rock, 1,215 and 1,350 feet.	
	2	Bridgeport.	Eshelman, No. 9.	428	Kirkwood.	1,355	19	927	573	1,357	418	Broken sand, 1,374 to 1,406 feet.	
					do.	893	39	463	1,037			Salt water, 1,030 feet.	
					Bridgeport.	1,332	23	902	598	1,332		Slate and red rock, 1,305 to 1,332 feet.	
	3	Bridgeport.	Eshelman, No. 6.	430	Kirkwood.								
					do.	885	14	415	1,085				
					do.	885	6	445	1,055				
	4	Bridgeport.	Eshelman, No. 2.	440	Bridgeport.	855	14	415	1,085			Quit in sand.	
					do.	901	44	461	1,039	945			
					do.								

5	Bridgeport.....	Eshelman, No. 7.....	440	{ Bridgeport. "Gas", Kirkwood.....	895 1,240 1,298	80	455	1,045	900	Gas, 1,240 feet.
6	Bridgeport.....	Eshelman, No. 8.....	440	{ Bridgeport. "do." "do." "do." "do." Buchanan.....	885 852 878 860 1,050 1,227 1,285	42 23 23 120 55 13 63	858 845 420 446 612 789 711	1,358 910 951 952 922 922 922	.....	Gas, 1,227 feet. Red rock, 1,144, 1,210 and 1,273 feet.
9	Bridgeport.....	Eshelman, No. 3.....	438	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
10	Bridgeport.....	Eshelman, No. 17.....	433	{ Bridgeport. "do." "do." "do." "do." "do." Buchanan Stray.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
11	Bridgeport.....	Eshelman, No. 5.....	433	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
12	Bridgeport.....	Eshelman, No. 1.....	428	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
13	Bridgeport.....	Eshelman, No. 18.....	440	{ Bridgeport. "do." "do." "do." "do." "do." Buchanan Stray.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
14	Ohio.....	Crackle, No. 19.....	446	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood-1.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
15	Ohio.....	Crackle, No. 18.....	446	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood-2.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
16	Ohio.....	Crackle, No. 5.....	446	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
17	Ohio.....	Crackle, No. 1.....	449	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
18	Ohio.....	Crackle, No. 17.....	454	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
19	Ohio.....	Crackle, No. 4.....	454	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
20	Ohio.....	Crackle, No. 23.....	455	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389
21	Ohio.....	Crackle, No. 12.....	455	{ Bridgeport. "do." "do." "do." "do." "do." Kirkwood.....	862 815 868 940 1,010 1,058 1,135 1,297	24 33 33 35 13 52 20 63	424 382 382 382 382 382 382 382	1,076 1,118 1,065 993 923 875 798 636	940 1,310	..... ..... ..... ..... ..... ..... ..... 1,389

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.								
29— N. W.	22	Ohio.....	Crackle, No. 7.....	448	865	25	417	1,083	1,083	.....	.....	982	Show	.....
	23	Ohio.....	Crackle, No. 3.....	433	858	10	425	1,075	1,075	.....	.....	.....	15	.....
	24	Ohio.....	Crackle, No. 26.....	443	905	55	472	1,028	1,028	.....	.....	.....	50	Gas, 1,285 feet.
	25	Ohio.....	Crackle, No. 2.....	443	867	9	424	1,076	1,076	.....	.....	1,336	.....	Salt water, 983 feet.
	26	Ohio.....	Crackle, No. 6.....	449	874	10	425	1,075	1,075	.....	.....	983	.....	.....
	27	Ohio.....	Crackle, No. 28.....	453	922	12	473	1,027	1,027	.....	.....	.....	.....	.....
	28	Ohio.....	Crackle, No. 24.....	465	1,309	18	856	644	1,309	1,338	.....	.....	85	.....
	29	Ohio.....	Crackle, No. 13.....	457	928	42	463	1,037	943	1,309	.....	.....	70	.....
	30	Ohio.....	Crackle, No. 10.....	473	908	86	451	1,049	914	996	.....	.....	.....	.....
	31	Ohio.....	Crackle, No. 20.....	472	883	12	451	1,090	.....	.....	.....	.....	Show	.....
	32	Ohio.....	Crackle, No. 8.....	468	1,005	4	532	968	1,009	Best	.....	.....	Fair	.....
	33	Silurian.....	Bowers, No. 4.....	455	1,292	39	820	680	1,292	1,336	.....	.....	75	.....
	34	Silurian.....	Bowers, No. 5.....	455	908	10	440	1,060	.....	.....	.....	999	.....	.....
	35	Silurian.....	Bowers, No. 6.....	458	840	10	385	1,115	.....	.....	.....	.....	.....	.....
	36	Silurian.....	Bowers, No. 3.....	456	981	15	355	1,145	.....	.....	.....	.....	.....	Quit in sand. Well abandoned.
					831	64	376	1,124	.....	.....	.....	983	.....	.....
					931	52	476	1,024	.....	.....	.....	.....	.....	.....
					802	29	344	1,156	.....	.....	.....	.....	Show	.....
					852	15	393	1,106	852	.....	.....	.....	50	.....
					906	34	448	1,082	906	.....	.....	940	.....	Salt water.
					710	90	234	1,246	.....	.....	.....	.....	.....	.....
					840	10	384	1,116	840	.....	.....	981	.....	.....
					981		525	975	.....	.....	.....	.....	.....	.....

37	Silurian.	Bowers, No. 8.	447	Bridgeport. "Gas".	923 1,220	47	476	1,024	.....	.....	.....	Gas, 1,220 feet.
38	Silurian.	Bowers, No. 2.	477	Kirkwood. Bridgeport.	1,292 810	30	773	727	.....	1,325	75	.....
39	Silurian.	Bowers, No. 7.	443	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
40	Silurian.	Bowers, No. 1.	441	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
41	Silurian.	Bowers and Ross, No. 1.	444	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
42	Silurian.	Bowers and Ross, No. 7.	449	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
43	Silurian.	Bowers and Ross, No. 6.	436	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
44	Silurian.	Bowers and Ross, No. 5.	436	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
45	Silurian.	Bowers and Ross, No. 9.	437	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
46	Silurian.	Bowers and Ross, No. 8.	438	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
47	Silurian.	Bowers and Ross, No. 4.	446	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
48	Silurian.	Bowers and Ross, No. 3.	452	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
49	Silurian.	Bowers and Ross, No. 2.	460	Bridgeport. "do."	830 900	65	363	1,137	890	900	.....	.....
1	Ohio	Lewis, No. 7.	481	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....
2	Ohio	Lewis, No. 18.	481	Bridgeport. "do."	830 900	15	363	1,137	890	900	.....	.....

S. W.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
29— S. W.	3	Ohio.	Lewis, No. 10.	462	Bridgeport.	813	45	351	1,149	833		75	
	4	Ohio.	Lewis, No. 8.	465	do.	964	27	502	998				
	5	Ohio.	Lewis, No. 4.	466	do.	810	45	345	1,155	828		125	
	6	Ohio.	Lewis, No. 16.	460	do.	940	50	475	1,095				
	7	Ohio.	Lewis, No. 9.	460	do.	760	102	294	1,206	775			
	8	Ohio.	Lewis, No. 6.	445	do.	380	53	464	1,036				
	9	Ohio.	Lewis, No. 15.	445	do.	1,317	20	857	643	1,320		125	Salt water, 870 feet.
	10	Ohio.	Lewis, No. 14.	488	Bridgeport.	762	18	302	1,198			25	Well abandoned.
	11	Ohio.	Lewis, No. 13.	490	do.	965	41	505	995	973			Gas 1,258 feet. Well abandoned.
	12	Ohio.	Lewis, No. 17.	493	do.	1,256		811	689				Gas 1,265 feet.
	13	Ohio.	Lewis, No. 2.	503	Bridgeport.	1,321	18	828	672	1,321	1,347	65	
	14	Ohio.	Lewis, No. 1.	487	do.	956	15	352	1,148	856		250	
	15	Ohio.	Lewis, No. 11.	495	do.	778	17	291	1,209	778		50	
	16	Ohio.	Lewis, No. 19.	497	do.	820	28	333	1,167	848		125	
	17	Ohio.	Lewis, No. 12.	541	do.	958	42	369	1,131			50	
	18	Ohio.	Lewis, No. 21.	539	do.	830	185	333	1,167	558		50	
					do.	1,263		766	734			75	
					do.	1,327	61	830	670	1,330	1,388	50	
					do.	843	6	302	1,198	844		50	
					do.	1,003	34	462	1,038	1,025		50	
					do.	1,300	15	761	739			75	Gas 1,300 feet.
					do.	1,373	37	834	666	1,373	1,414		

19 Ohio.	Lewis, No. 22.	534	Kirkwood.	1,399	17	855	645	1,389	1,408	100	.....
20 Ohio.	Lewis, No. 5.	533	Bridgeport.	887	55	354	146	912	.....	50	Salt water, 1,049 feet.
21 Ohio.	Lewis, No. 20.	508	do.	1,036	10	503	997	.....	.....	.....	Gas, 1,303 feet.
22 Ohio.	Lewis, No. 3.	508	"Gas."	1,303	18	705	705	.....	.....	.....	.....
			Kirkwood.	1,365	31	857	645	1,365	1,401	70	.....
			Bridgeport.	811	14	303	1,197	.....	.....	.....	.....
			do.	870	16	362	1,158	.....	.....	.....	.....
1 Silurian.	Neal No. 1.	498	"Gas"	1,270	47	772	728	1,270	.....	.....	Salt water, 873 feet. Well abandoned.
2 Silurian.	Neal, No. 4.	504	Bridgeport.	885	10	381	1,119	.....	.....	.....	Gas, 1,270 feet. Red rock, 1,220 feet.
3 Silurian.	Neal, No. 8.	490	do.	1,015	25	511	989	.....	.....	.....	.....
			do.	987	34	497	1,003	992	1,021	50	Quilt in sand.
			do.	750	155	248	1,252	885	.....	Show	Salt water, 905 feet.
			do.	1,020	35	518	982	.....	.....	.....	.....
4 Silurian.	Neal, No. 7.	502	Buchanan.	1,175	55	673	827	.....	.....	.....	.....
			"Gas."	1,362	8	860	640	1,362	.....	.....	.....
			Kirkwood-1.	1,460	20	958	542	1,460	.....	.....	.....
			Kirkwood-2.	1,506	18	004	496	1,506	1,526	180	.....
			Bridgeport.	1,760	240	270	1,230	780	.....	.....	.....
5 Silurian.	Neal, No. 6.	490	Bridgeport and Buchanan.	1,100	100	610	890	.....	.....	.....	.....
			"Gas."	1,350	25	860	640	1,350	.....	.....	.....
			Kirkwood.	1,420	40	930	570	1,420	1,492	225	.....
			Bridgeport.	920	20	431	1,069	.....	.....	.....	.....
			Buchanan.	1,220	30	731	769	.....	.....	.....	.....
6 Silurian.	Neal, No. 5.	489	Stray.	1,265	10	806	694	.....	.....	.....	Salt water.
			"Gas."	1,385	5	896	604	.....	.....	.....	do.
			Kirkwood.	1,442	50	953	547	.....	.....	Show	.....
			Stray.	1,291	8	824	776	.....	1,492	110	Quilt in sand.
7 Silurian.	Neal, No. 2.	407	"Gas."	1,350	.....	863	637	1,335	1,390	.....	.....
			Bridgeport.	975	15	518	982	.....	.....	.....	Salt water.
			do.	1,130	25	673	827	.....	.....	.....	.....
8 Silurian.	Neal, No. 3.	457	Buchanan.	1,190	103	733	767	.....	.....	.....	.....
			"Gas."	1,305	20	848	652	1,305	.....	.....	.....
			Kirkwood.	1,376	24	939	581	1,376	.....	.....	.....
			Tracey.	1,435	15	978	522	1,435	.....	.....	.....
			Kirkwood.	1,490	27	982	518	1,490	1,517	50	.....
9 Ohio.	Middaugh, No. 4.	508	"Gas"	1,435	8	913	517	.....	.....	.....	.....
10 Ohio.	Middaugh, No. 6.	522	Kirkwood.	1,505	20	983	517	1,505	1,528	75	.....
			"Gas."	1,410	30	892	608	.....	.....	.....	.....
11 Ohio.	Middaugh, No. 7.	518	Kirkwood.	1,540	18	022	478	1,540	1,579	140	.....
12 Ohio.	Middaugh, No. 5.	492	Bridgeport.	1,007	27	515	985	1,015	1,034	125	.....
			"Gas."	1,400	18	944	556	.....	.....	.....	.....
13 Ohio.	Middaugh, No. 3.	503	Kirkwood.	1,525	29	1,009	491	1,525	1,554	50	.....
14 Ohio.	Middaugh, No. 8.	516	do.	1,517	32	1,014	486	1,517	1,586	150	.....
15 Ohio.	Middaugh, No. 2.	493	do.	1,507	30	1,014	486	1,528	1,539	60	.....
			Bridgeport.	852	18	361	139	.....	.....	.....	.....
16 Ohio.	Middaugh, No. 1.	491	Kirkwood.	874	36	383	1,117	874	.....	.....	.....
			do.	1,522	21	1,031	469	1,522	1,543	200	.....

12 Bridgeport.	Boyd No. 9.	455	Bridgeport.	775	60	320	1,180				Broken sand, 775 to 825 feet.
	do.		do.	886	19	431	1,069				
	do.		do.	908	17	453	1,047				
	do.		do.	935	30	480	1,090	950			
13 Bridgeport.	Boyd, No. 4.	456	do.	808	25	352	1,148				Quit in salt water sand.
	do.		do.	925		469	1,031	938	960		Salt water, 855 feet.
	do.		do.	841	16	388	1,112				
14 Bridgeport.	Baltzell, No. 8.	453	do.	887	71	434	1,066	907			Salt water, 975 feet.
	do.		do.	968	28	515	985				Salt water, 1,050 feet.
	do.		Buchanan.	1,041		588	912		1,057		
15 Bridgeport.	Baltzell, No. 3.	458	Bridgeport.	878		420	1,080	900		Light	
	do.		do.	925		467	1,033	925		120	
	do.		do.	965		507	993	965		Light	
	do.		do.	918	14	453	1,047				
16 Bridgeport.	Baltzell, No. 1.	465	do.	956	25	491	1,009				Flowing well.
	do.		Buchanan.	1,000	75	535	965				
	do.		do.	800	20	328	1,172	800		Show	
17 Bridgeport.	Baltzell, No. 12.	472	do.	840	40	368	1,132				
	do.		do.	885	105	413	1,087	{ 900 } { 948 }	995		Broken sand.
18 Bridgeport.	Baltzell, No. 5.	460	do.	755	25	295	1,205				
19 Bridgeport.	Baltzell, No. 13.	463	do.	912	8	452	1,048	912	941	160	Drilling
20 Bridgeport.	Baltzell, No. 2.	460	do.								No record
	do.		do.	765	4	300	1,200	765		Show	
	do.		do.	810	10	345	1,145				
21 Bridgeport.	Baltzell, No. 10.	465	do.	854	20	389	1,111				
	do.		do.	905	20	440	1,060	905		Light	
	do.		do.	950	24	485	1,015	955	980	Best	
	do.		do.	765	25	298	1,202	770			
	do.		do.	835	25	368	1,132				
	do.		do.	908	31	441	1,059	908			Gas, 958 feet.
22 Bridgeport.	Baltzell, No. 11.	467	do.	952	83	485	1,015	958			
	do.		Buchanan.	1,102	18	635	865				Salt water.
	do.		Stray.	1,170	27	703	797				Gas, 1,240 feet.
	do.		"Gas",	1,240	8	773	727				Red rock, 1,309 feet.
	do.		Kirkwood.	1,314	33	847	653	1,318	1,365		
	do.		Bridgeport.	815	5	323	1,177				Broken sand 850 to 904 and 914 to 930 feet.
23 Bridgeport.	Baltzell, No. 9.	492	do.	850	87	358	1,142				Gas, 1,000 feet. Quit in white sand.
	do.		do.	991	29	499	1,001	1,000	1,020		
	do.		do.	945	18	453	1,047	950		Light	
	do.		do.	1,010	50	518	982				Gas, 1,015 feet. Salt water 1,060 feet.
24 Bridgeport.	Baltzell, No. 7.	492	Kirkwood.	1,361	41	869	631	1,365			Red rock, 1,220 and 1,346 feet.
	do.		Tracey.	1,510	10	1,018	482				Gas, 1,515 feet.
	do.		McClosky.	1,575	20	1,083	417		1,565	Gas	
25 Ohio.	Crackle, No. 14.	468	Bridgeport.	794	40	326	1,174		990		Gas, 1,590 feet.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.		
30— N. E..	26	Ohio.....	Crackle, No. 29	468	Bridgeport	935	70	467	1,033	.....	.....
					Kirkwood	1,291	46	823	677	1,291	.....
	27	Ohio.....	Crackle, No. 30	466	Tracey	1,404	12	936	564	1,407	250
					Bridgeport	1,032	72	466	1,034	.....	.....
					Kirkwood	1,311	13	845	655	1,311	.....
					Tracey	1,382	21	928	574	1,392	90
	28	Ohio.....	Crackle, No. 16	470	Bridgeport	908	12	438	1,062	.....	.....
					do.	930	6	460	1,040	.....	.....
	29	Ohio.....	Crackle, No. 21	469	do.	964	9	494	1,006	.....	.....
					Kirkwood	1,285	37	826	674	1,285	70
N. W..	30	Ohio.....	Crackle, No. 11	469	Bridgeport	870	125	401	1,099	1,255	.....
					do.	928	36	470	1,030	970	70
	31	Ohio.....	Crackle, No. 25	458	do.	869	.....	416	1,084	.....	.....
					do.	915	10	462	1,038	.....	.....
	32	Ohio.....	Crackle, No. 9	453	do.	935	13	482	1,018	985	.....
					do.	871	30	431	1,069	875	Produced salt water the first day.
	33	Ohio.....	Crackle, No. 22	440	do.	807	13	358	1,142	.....	.....
					do.	918	2	469	1,031	.....	.....
	34	Ohio.....	Crackle, No. 15	449	do.	945	20	496	1,004	995	.....
					do.	914	14	450	1,050	920	.....
N. W..	35	Ohio.....	Crackle, No. 27	464	do.	960	25	496	1,004	970	30
					do.	810	43	371	1,129	921	.....
	1	Bridgeport	Boyd, No. 6	439	do.	910	71	471	1,029	921	.....
					Kirkwood	1,290	38	851	649	1,295	.....
	2	Bridgeport	Boyd, No. 3	436	do.	883	3	374	1,126	1,341	Salt water, 981 feet.
					Bridgeport	810	30	447	1,053	903	Red rock, 1,277 feet.
	3	Bridgeport	Boyd, No. 8	439	do.	800	.....	361	1,139	.....	.....
					do.	910	.....	471	1,029	920	.....
	4	Bridgeport	Boyd, No. 1	433	do.	1,317	46	878	622	1,367	.....
					do.	1,338	5	905	593	1,343	.....

5	Bridgeport.	Boyd, No. 10.	430	Bridgeport.	835	17	405	1,095				Salt water, 910 feet.
				do.	877	33	447	1,053				Salt water.
				Buchanan	1,035	37	605	895				do.
				Stray	1,128	22	698	802				
6	Bridgeport.	Boyd, No. 7.	472	do.	1,175	5	745	755				
				Kirkwood	1,341	59	911	589	1,364			
				McClosky	1,610	19	180	320	1,626	1,629		
				Bridgeport.	820	52	348	1,152	820			
7	Bridgeport.	Baltzell, No. 6.	486	do.	900	70	428	910	1,330	1,389		
				do.	1,318	57	846	654	1,372	1,414		
				Kirkwood	1,362	39	876	624	1,330			Gas, 1,327 feet.
				"Gas"	1,327			850	650			Gas, 1,005 feet.
8	Bridgeport.	Baltzell, No. 4.	477	Kirkwood	1,386	44	909	591				Salt water, 1,100 feet.
				do.	1,386			591				Salt water, 1,080, 1,100 and 1,220 feet.
				Bridgeport.	930	120	470	1,030				
				"Gas"	1,338	6	878	622				Gas, 1,327 feet.
9	Snowden Bros.	Pepple, No. 4.	460	Kirkwood	1,396	26	936	564				Slate, 1,411 to 1,412 feet.
				Bridgeport.	850	40	386	1,114				Broken sand.
				do.	1,010	55	546	954				Hole full salt water, 1,140 feet.
				Buchanan	1,140	20	676	824				
10	Snowden Bros.	Pepple, No. 9.	464	Stray	1,240	20	776	724				
				"Gas"	1,378	14	914	586	1,384			Light
				Kirkwood-1	1,460	10	986	514				Red slate, 1,280 feet.
				Kirkwood-2	1,469	27	1,005	495	1,471			
11	Snowden Bros.	Pepple, No. 11.	458	Tracey-1	1,365	10	1,101	399				Gas, 1,575 feet.
				Tracey-2	1,600	23	1,136	364	1,605			Gas, 1,605 feet.
				McClosky	1,643	12	1,179	321		1,702		Green oil, 1,085 feet. Lime stone, 1,082 to 1,702 feet.
				Bridgeport.	820	10	362	1,138				
12	Snowden Bros.	Pepple, No. 7.	430	do.	850	5	392	1,108				Salt water, 945 feet.
				do.	880	35	422	1,078				
				do.	940	25	482	018				
				Buchanan	1,075	30	617	883				Salt water, 945 feet.
13	Snowden Bros.	Pepple, No. 1.	458	"Gas"	1,335	10	877	623	1,335			Red slate, 1,254 feet.
				Kirkwood	1,393	42	935	565	1,395			
				Tracey	1,558	16	1,100	400		1,574		Gas, 1,574 feet.
				Bridgeport.	815	115	385	1,115				Hole full water, 895 feet.
14	Snowden Bros.	Pepple, No. 7.	430	do.	975	50	545	955				
				do.	1,050	32	620	880				Salt water, 1,173 feet.
				Buchanan-1	1,120	53	690	810				
				Buchanan-2	1,200	10	770	730				
15	Snowden Bros.	Pepple, No. 7.	430	"Gas"	1,305	13	875	625				
				Kirkwood-1	1,390	40	930	570	1,365			
				Kirkwood-2	1,430	10	1,000	500				
				Tracey	1,503	47	1,073	427				Gas, 1,513 feet.
16	Snowden Bros.	Pepple, No. 1.	458	McClosky	1,580	39	1,150	350	1,603	1,619		Sandy lime
				"Gas"	1,375	22	917	583				Salt water, 1,250 feet.
				Kirkwood-1	1,415	11	957	543				
				Kirkwood-2	1,430	3	972	528		1,446	100	

15	Bridgeport.....	466	Whipsky, No. 3.....	915 1,448	551 4	449 982	1,019 518	940	.....	Salt water, 965 feet.....
16	Bridgeport.....	486	Whipsky, No. 1.....	1,480 1,585 1,495	22 33	506 1,094 1,009	1,465 1,611 1,519	.....	.....	Light Gas, 1,585 feet. 25 Salt water, 1,135 and 1,526 feet.
17	Bridgeport.....	466	Whipsky, No. 2.....	1,380 1,460 1,495 1,594	30 10 28	914 506 471 1,600	1,384 1,463 1,600	.....	.....	Light Gas, 1,594 feet. Salt water, 1,750 feet.
18	Ohio.....	486	Madding, No. 8.....	1,462 1,393	41	976	524	1800	.....	Gas, 1,593 feet.
19	Ohio.....	464	Madding, No. 9.....	1,683 1,589 1,672	9 33 12	1,197 1,125 282	303 375 1,672	1,692 1,735	.....	150 285 Gas, 1,675 feet.
1	Pemberton.....	519	Pemberton, No. 4.....	837 937	5 10	318 418	1,182 1,082	997	.....	150 Well abandoned.
2	Pemberton.....	518	Pemberton, No. 15.....	970 950	27 75	451 432	1,049 1,068	970	.....	Salt water, 1,050 feet.
3	Pemberton.....	519	Pemberton, No. 8.....	970 1,050 1,425	35 15	451 531 906	1,049 969 594	.....	.....	Salt water, 1,050 feet.
4	Pemberton.....	530	Pemberton, No. 3.....	834 894 917	20 20 20	304 364 387	1,196 1,136 1,113	.....	.....	150 Salt water, 997 to 1,017 feet
5	Pemberton.....	530	Pemberton, No. 7.....	858 1,010 1,095 1,345	27 12 115	328 480 565	1,172 1,020 985	.....	.....	Salt water Gas, 1,345 feet. Red rock, 1,275 feet.
6	Pemberton.....	537	Pemberton, No. 1.....	1,421 830 931	41 11 26	891 999 394	1,609 1,201 1,106	1,472	.....	250 Well abandoned.
7	Pemberton.....	537	Pemberton, No. 6.....	907 998 905 1,035 1,330	13 11 26 44 23	1,070 461 329 408 793	1,070 1,089 1,171 1,132 1,002	.....	.....	Salt water. Red rock, 1,250 and 1,280 feet.
8	Pemberton.....	537	Pemberton, No. 16.....	1,391 904 972	34 46 37	854 1,133 367	646 925	1,425	.....	.....
9	Pemberton.....	520	Pemberton, No. 2.....	939 984	18 20	383 464	1,117 1,036	.....	.....	.....

S. E....

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
30— S. E....	10	Pemberton.....	Pemberton, No. 19.....	520	Bridgeport.....	950	80	430	1,070	970		
					"Gas".....	1,293	10	773	727			
					Kirkwood.....	1,343	62	823	677			Red rock, 1,333 feet.
					Stray.....	1,434	14	914	586			
					Tracy.....	1,501	18	981	519	1,519		
	11	Pemberton.....	Pemberton, No. 14.....	513	Bridgeport.....	940	75	427	1,073			
					"Gas".....	1,295		782	618			Salt water, 1,015 feet.
					Kirkwood.....	1,335	47	822	678	1,382		
					"Gas".....	1,300		787	713			
					Kirkwood.....	1,357	49	844	636	1,406		No record. do
	12	Pemberton.....	Pemberton, No. 13.....	513	Bridgeport.....	925	80	405	1,095	975		
					Kirkwood-1.....	1,380		860	640			
					Kirkwood-2.....	1,393	55	873	627	1,448		
					Bridgeport.....	804		284	1,216			
					do.....	918	92	398	1,102	980		
	16	Pemberton.....	Pemberton, No. 11.....	520	Buchanan.....	1,080		560	940			
					Kirkwood-1.....	1,385	13	865	635			
					Kirkwood-2.....	1,408	38	838	612	1,410		
					Kirkwood.....	1,404	45	884	616	1,429		No record.
					Bridgeport.....	806	24	284	1,216	1,499		
	17	Pemberton.....	Pemberton, No. 17.....	520	do.....	926	4	404	1,096			
					do.....	955	53	433	1,067			
					do.....	810	30	293	1,207	1,008	150	
					do.....	900	45	383	1,117	925		
					do.....	960	40	443	1,057	985		
	20	Bridgeport.....	Willey, No. 6.....	517	do.....	1,063	42	546	954			
					Buchanan-1.....	1,107	95	500	910			Salt water
					Buchanan-2.....	1,320	10	803	697			
					"Gas".....	1,402	32	883	615	1,437		
					Kirkwood.....	1,402						

21	Bridgeport.....	Willey, No. 10.....	517	Bridgeport..... do..... do..... do..... Buchanan..... "Gas"..... Kirkwood.....	815 903 959 412 820 900 1,065 1,320 1,398	60 40 31 19 85 133 10	298 386 1,114 903 1,088 1,192 388 553 947 808 692	1,202 1,114 903 1,088 1,192 388 553 947 808 692	826 1,114 903 1,088 1,192 388 553 947 808 692	Light Salt water, 910 feet.
22	Bridgeport.....	Willey, No. 5.....	512	Bridgeport..... do..... do..... do..... Buchanan..... "Gas"..... Kirkwood.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
23	Bridgeport.....	Willey, No. 4.....	517	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Tracey..... Stray..... McClusky..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
24	Bridgeport.....	Willey, No. 7.....	512	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
25	Bridgeport.....	Willey, No. 8.....	507	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
26	Bridgeport.....	Willey, No. 11.....	507	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
27	Bridgeport.....	Willey, No. 9.....	480	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
28	Bridgeport.....	Willey, No. 1.....	475	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.
29	Bridgeport.....	Willey, No. 2.....	512	Bridgeport..... do..... do..... do..... Buchanan-1..... Buchanan-2..... "Gas"..... Kirkwood..... Bridgeport..... do..... Buchanan-1..... Buchanan-2.....	750 897 950 965 1,070 1,100 1,330 1,396 1,500 1,540 1,630 830 920 1,047 1,079	25 35 6 20 25 95 10 49 10 5 128	233 380 1,120 433 1,067 448 553 947 813 687 879 621 1,411 923 477 1,113 387 1,382 840 1,092 950 535 965 567 933	1,267 1,120 907 1,067 1,052 972 947 917 687 621 1,411 477 387 840 950 965 933	1,402 { 1,412 1,424 }	Red rock, 1,245 and 1,381 feet. Salt water. Salt water. Salt water, 1,077 feet. Salt water, 1,145 feet. Gas, 1,235 feet.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
30— S; E—	30	Bridgeport.	Willey, No. 3.	514	Bridgeport.	900	35	386	1,114				
					do.	955	13	441	1,059		1,037		
					do.	980		476	1,024				
	31	Curtis, Akin & Co.	Fitch, No. 5.	504	do.	1,003		499	1,001				
					"Gas"	1,320	25	816	684			Gas	Red rock, 1,380 feet.
					Kirkwood.	1,387	5	883	617				
					Bridgeport.	1,775	10	273	1,227				
					do.	845	9	343	1,157				
	32	Curtis, Akin & Co.	Fitch, No. 9.	502	do.	864	35	362	1,138				
					do.	915	10	413	1,087				Gas, 968 feet.
					do.	960	12	458	1,042	915			
					do.	1,025	19	523	937	1,030			
					Buchanan-1.	1,065	30	563	937				Salt water, 1,075 feet.
	33	Curtis, Akin & Co.	Fitch, No. 14.	505	Buchanan-2.	1,135	17	633	867				
					do.	1,300	12	798	702				Gas, 1,306 feet.
					Kirkwood-1.	1,381	3	879	621	1,380			
					Kirkwood-2.	1,391	17	889	611				Gas, 1,391 feet.
					Tracey.	1,506	8	1,004	496				Gas, 1,506 feet.
	34	Curtis, Akin & Co.	Fitch, No. 2.	496	McClosky.	1,616		1,114	386				Gas, 1,616 feet.
					Bridgeport.	922	6	417	1,083	925		Light	
					do.	1,035	25	530	970	1,042			Salt water, 1,075 feet.
					Buchanan.	1,075	15	570	930				
					Kirkwood.	1,394	2	889	611				Gas, 1,514 feet.
	35	Curtis, Akin & Co.	Fitch, No. 15.	496	Tracey.	1,514	6	1,009	491		1,617		
					Bridgeport.	795		299	1,201				
					do.	848		352	1,148			Best	
					do.	910		414	1,086	945			
					do.	925	19	429	930				
					do.	1,005	20	509	991	1,015			
					Buchanan.	1,045		549	951				Salt water, 1,047 feet.
					Kirkwood.	1,370	12	874	626	1,373	1,433		

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
30—S. E.	47	Curtis, Akin & Co.	Fitch, No. 7.	494	Bridgeport.....	838	52	364	1, 136	894		
					do.....	951		457	1, 043	951		
					Bridgeport and Buchanan.....							
					"Gas".....	1, 015	171	521	979	1, 020		Salt water, 1,030 feet.
					Kirkwood-1.....	1, 300	20	806	694			Gas, 1,305 feet.
					Kirkwood-2.....	1, 365	40	871	629	1, 370		Red rock, 1,295 feet.
					Tracey-1.....	1, 416	6	922	578			
					Tracey-2.....	1, 506	14	1, 012	488			
					Tracey-3.....	1, 565	8	1, 071	429			Gas, 1,565 feet.
					McClosky.....	1, 600		1, 106	394	1, 606		Gas, 1,600 feet.
48		Curtis, Akin & Co.	Fitch, No. 16.	498	Bridgeport.....	889		391	1, 109			
					do.....	1, 015	12	517	983	1, 015		
					do.....	776		301	1, 199			
					do.....	806		331	1, 189			
					do.....	874		399	1, 101	947		
					do.....	773	79	298	1, 202	773		
					do.....	903	40	430	1, 070			
					do.....	990	5	515	985	990		
					Buchanan.....	1, 000	45	585	915			
					"Gas".....	1, 228		753	747			
					Kirkwood-1.....	1, 300	40	825	675	1, 300		
					Kirkwood-2.....	1, 368	20	893	607			
					Tracey.....	1, 400	24	925	575	1, 411		
					Tracey.....	802		328	1, 172			
					do.....	912	81	438	1, 062			
51		Kewanee.....	Stallings, No. 1.	474	Bridgeport.....	1, 304	21	829	671			
					Kirkwood.....	1, 401	21	926	574	1, 433		
52		Kewanee.....	Stallings, No. 13.	475	Tracey.....	834		341	1, 159			
					Bridgeport.....			371	1, 129			
					do.....	864		444	1, 056			
					do.....	937	5					
53		Kewanee.....	Stallings, No. 4.	493	Kirkwood.....	1, 296	54	803				

54	Kewanee	Stallings, No. 9	493	{	Bridgeport.	907	13	414	1,086	912	.....	Show
					..do.	945	51	452	1,048	.....	997	
55	Kewanee	Stallings, No. 14	498		"Gas"	945		447	1,053	.....	
					Kirkwood	1,200	3	762	738	.....	250	
					Tracey	1,312	60	814	686	.....	
56	Kewanee	Stallings, No. 8	498		Bridgeport.	1,395	39	897	603	.....	1,454	
					..do.	933	17	435	1,065	.....	
					..do.	980	22	482	1,018	.....	1,004	
57	Kewanee	Stallings, No. 5	472		..do.	869	41	397	1,103	.....	905	
					..do.	930		458	1,042	.....	997	
					..do.	965		493	1,007	.....	
58	Kewanee	Stallings, No. 3	488		..do.	913		425	1,075	.....	
					..do.	975	10	487	1,013	.....	
					Kirkwood	1,322	40	818	682	.....	
59	Kewanee	Stallings, No. 12	504		Tracey	1,435	5	931	569	.....	
					McClosky	1,562	4	1,058	442	.....	1,506	Gas, 1,562 feet, 6,000,000 cu. ft. gas daily
60	Kewanee	Stallings, No. 7	504		Bridgeport.	940	20	436	1,064	.....	1,016	
					..do.	913		421	1,079	.....	
					..do.	930		438	1,062	.....	
61	Kewanee	Stallings, No. 6	492		..do.	960		468	1,032	.....	
					..do.	985		493	1,007	.....	1,206	
					..do.	903		416	1,084	.....	
62	Kewanee	Stallings, No. 11	487		"Gas"	1,262	10	775	725	.....		Gas, 1,262 feet.
					Kirkwood	1,320	16	833	667	.....	1,355	
					Bridgeport.	925	77	448	1,052	.....	
					..do.	1,248		771	729	.....	
63	Kewanee	Stallings, No. 2	477		"Gas"	1,313		836	664	.....		Gas.
					Kirkwood-1	1,350	8	873	627	.....		Oil.
					Kirkwood-2	1,365	34	888	612	.....		Gas.
					Tracey	798	6	316	1,184	.....		Oil.
64	Kewanee	Stallings, No. 10	482		Bridgeport.	884	10	402	1,098	.....	
					..do.	930	30	448	1,052	.....	984	
					..do.	781	30	288	1,212	.....	35	
65	Ohio	Sutton, No. 5	493		..do.	845	51	352	1,148	.....	
					Buchanan	1,000	15	512	988	.....	
66	Ohio	Sutton, No. 9	488		Kirkwood	1,334	60	846	654	.....	1,394	Well abandoned.
					Bridgeport.	820	210	331	1,169	.....	
67	Ohio	Sutton, No. 11	489		Kirkwood	1,335	54	846	654	.....	1,395	100
					..do.	806	44	302	1,198	.....	
68	Ohio	Sutton, No. 4	504		Bridgeport.	960	49	456	1,014	.....	35	
					..do.	790	250	290	1,210	.....	
					..do.	1,331	59	831	669	.....	1,340	
69	Ohio	Sutton, No. 10	500		Tracey	1,495	10	995	505	.....		Gas, 1,495 feet.
					McClosky	1,565	5	1,065	435	.....	1,570	Gas, 1,565 feet, 2,000,000 cu. ft. daily
70	Ohio	Sutton, No. 7	505		Kirkwood	1,321	24	816	684	.....	1,345	68
71	Ohio	Sutton, No. 1	504		Bridgeport.	783	37	279	1,221	.....	
					..do.	893	41	389	1,111	.....	
72	Ohio	Sutton, No. 12	485		Kirkwood	1,343	33	858	642	.....	1,386	75

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Thickness penetrated —feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Name.	Depth to top—feet.	Thickness penetrated —feet.							
30— S. E....	73	Ohio.....	Sutton, No. 3.....	508	{	Bridgeport.....	816	24	308	1,192	960	1,694	35	Gas, 1,315 feet.	
	74	Ohio.....	Sutton, No. 8.....	542	{	Kirkwood.....	947	24	439	1,061	1,392	1,403	60	Gas, 1,315 feet.	
	75	Ohio.....	Sutton, No. 2.....	542	{	Bridgeport.....	1,392	25	850	650	1,195	868	60	Gas, 1,315 feet.	
	76	Ohio.....	Sutton, No. 6.....	537	{	do.....	847	20	403	1,097	835	1,045	50	Gas, 1,315 feet.	
	1	Ohio.....	Wright, No. 1.....	435	{	do.....	945	20	283	1,217	1,045	1,694	25	T. 5 N., R. 12 W.	
30 (N)— N. W.... 31 (N.)— N. W.... S. W....	1	Haywood.....	Kimmel, No. 1.....	432	{	do.....	1,647	33	1,212	288	1,650	1,750	Dry	T. 5 N., R. 12 W.	
	435	Ohio.....	Waggoner, No. 1.....	435	{	do.....	1,692	12	1,228	473	1,482	1,647	23	Gas 1,647 feet.	
	2	Ohio.....	Waggoner, No. 3.....	435	{	Kirkwood.....	1,683	18	1,212	228	1,647	2,001	Dry	T. 5 N., R. 13 W.	
	3	Ohio.....	Waggoner, No. 2.....	435	{	McClosky.....	1,647	3	1,235	265	1,647	2,001	Dry	T. 5 N., R. 13 W.	
	34— S. E.... 35— N. E....	Ohio.....	Waggoner, No. 1.....	437	{	McClosky.....	1,670	3	1,235	265	1,647	2,001	Dry	T. 5 N., R. 13 W.	
34— S. E.... 35— N. E....	1	Haywood.....	A. Waggoner, No. 1.....	436	{	Kirkwood.....	1,490	25	1,054	446	1,560	1,683	50	Gas, 1,545 feet.	
	2	Haywood.....	D. Updike, No. 7.....	436	{	Tracey.....	1,540	20	1,104	396	1,545	1,563	37	Gas, 1,545 feet.	
	3	Haywood.....	D. Updike, No. 5.....	436	{	Kirkwood.....	1,480	14	1,024	476	1,543	1,563	40	Gas, 1,545 feet.	
	4	Ohio.....	D. Updike, No. 6.....	436	{	Tracey.....	1,498	30	1,062	438	1,520	1,520	12	Gas, 1,510 feet.	
	5	Ohio.....	G. Raop, No. 3.....	435	{	McClosky.....	1,617	31	1,181	319	1,630	1,658	30	Gas, 1,647 feet.	
34— S. E.... 35— N. E....	5	Ohio.....	Schafer, No. 1.....	435	{	Tracey.....	1,542	18	1,107	393	1,660	1,700	30	Gas, 1,647 feet.	
	6	Ohio.....	Schafer, No. 2.....	435	{	do.....	1,545	16	1,110	390	1,545	1,563	37	Gas, 1,545 feet.	
	7	Ohio.....	Parrot, No. 2.....	435	{	do.....	1,543	14	1,108	392	1,543	1,563	37	Gas, 1,545 feet.	
	8	Ohio.....	Parrot, No. 1.....	435	{	do.....	1,510	30	1,075	425	1,520	1,520	12	Gas, 1,510 feet.	
	9	Ohio.....	Racop, No. 2.....	436	{	McClosky.....	1,626	10	1,191	309	1,658	1,658	30	Gas, 1,647 feet.	

10 Ohio.....	Racop, No. 1.....	436	Tracey-1..... Tracey-2..... McClosky.....	1,520 1,567 1,646	10 8 8	1,084 1,131 1,210	416 369 290	1,567 1,647 20	Gas, 1,522 feet.
11 Ohio.....	Devonshire, No. 1.....	436	Tracey-2..... McClosky.....	1,566 1,640	11 8	1,130 1,204	370 296	1,567 1,648	40 Gas, 1,640 feet.
12 Ohio.....	Mushrush, No. 1.....	435	Tracey.....	1,540	21	1,105	395	1,540	60 Gas, 1,545 feet.
13 Ohio.....	Mushrush, No. 2.....	436	do.....	1,545	17	1,137	393	1,545	85
1 Ohio.....	Rigall, No. 3.....	436	do.....	1,573	25	1,109	391	1,574	112
2 Ohio.....	Rigall, No. 2.....	435	do.....	1,561	29	1,126	374	1,561	200 Gas, 1,561 feet.
3 Ohio.....	Rigall, No. 1.....	435	do.....	1,543	10	1,108	392	1,543	55 Gas, 1,543 feet.
4 Ohio.....	Rigall, No. 4.....	435	do.....	1,560	30	1,125	375	1,565	85
1 Ohio.....	Poland, No. 3.....	435	do.....	1,547	16	1,112	388	1,547	75
2 Bridgeport.....	Eaton, No. 1.....	436	Bridgeport.....	1,525	15	1,089	411	1,525	Salt water, 935 feet.
3 Bridgeport.....	Nuttall, No. 1.....	435	do.....	1,000	10	564	936	1,000	Well not completed.
1 Ohio.....	Poland, No. 1.....	434	Buchanan.....	1,280	10	844	636	1,280	Salt water.
2 Ohio.....	Poland, No. 2.....	430	Tracey.....	1,540	20	1,106	394	1,540	Drilling.
3 Haywood.....	D. Updike, No. 4.....	435	Tracey.....	1,510	8	1,076	424	1,510	10 Gas, 1,540 feet.
4 Mahutska.....	W. Updike, No. 4.....	434	Tracey..... McClosky.....	1,615 1,615	24 24	1,181 1,181	319	1,648	Drilling. No record kept.
1 Bell Bros.....	Nuttall, No. 5.....	432	Bridgeport..... Buchanan-1..... Buchanan-2..... Kirkwood..... McClosky.....	935 1,060 1,290 1,488 1,643	60 45 40 72 31	503 628 858 1,056 1,211	997 872 642 444 289	1,700	Salt water, 975 feet.
2 Bell Bros.....	Nuttall, No. 3.....	429	Tracey.....	1,515	22	1,086	414	1,669	Gas, 1,510 feet.
3 Bell Bros.....	Nuttall, No. 2.....	434	Tracey.....	1,515	22	1,213	287	1,669	Well abandoned.
4 Bell Bros.....	Nuttall, No. 4.....	436	Tracey.....	1,631	29	1,081	419	1,663	Gas.
5 Snowden Bros.....	Nuttall, No. 2.....	436	Tracey.....	1,515	30	1,079	421	1,663	Gas.
6 Bell Bros.....	Nuttall, No. 1.....	432	McClosky.....	1,609	30	1,173	327	1,644	No record kept.
7 Snowden Bros.....	Nuttall, No. 1.....	434	Tracey.....	1,515	20	1,083	417	1,648	Quit in sand.
8 Snowden Bros.....	Nuttall, No. 3.....	436	McClosky..... Kirkwood.....	1,628 1,495	20 7	1,196 1,061	304 439	1,648	Salt water, 975, 1,100 and 1,490 feet.
			Tracey.....	1,522	23	1,088	412	1,637	Top lime, 1,335 to 1,420 feet.
			McClosky.....	1,605	25	1,169	331	1,610	Salt water.
			Bridgeport.....	965	75	529	971	761	Salt water.
			Buchanan.....	1,175	45	739	761	761	Salt water.
			"Gas".....	1,325	23	889	611	1,463	Red rock, 1,420 feet.
			Kirkwood.....	1,437	73	1,001	499	1,463	Salt water, 1,457 feet.
			Tracey.....	1,533	5	1,097	403	1,553	
			McClosky.....	1,605	25	1,169	331	1,610	

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36— N. E..	9	Snowden Bros.	Nuttall, No. 4.	436	Bridgeport.....	915	105	479	1,021	.....	.....	.....	Hole full of water, 1,010 feet.....
					Buchanan-1.....	1,050	125	614	886	.....	.....	.....	.....
					Buchanan-2.....	1,240	60	804	696	.....	.....	.....	.....
					Stray.....	1,379	4	943	557	.....	.....	Show	.....
					Kirkwood.....	1,444	8	1,008	492	1,444	.....	.....	Salt water, 1,447 feet.....
					Tracey.....	1,481	39	1,045	455	.....	.....	.....	Gas, 1,480 feet.....
					McClosky.....	1,613	17	1,177	323	1,615	.....	.....	.....
					Bridgeport.....	785	215	350	1,150	.....	.....	.....	Hole full of water, 1,000 feet.....
					Buchanan-1.....	1,095	65	690	840	.....	.....	.....	.....
					Buchanan-2.....	1,290	35	825	675	.....	.....	Show	Red rock, 1,310 feet.....
N. W..	10	Snowden Bros.	Nuttall, No. 5.	435	Kirkwood-1.....	1,434	11	999	501	1,434	.....	.....	.....
					Kirkwood-2.....	1,455	10	1,020	480	.....	.....	.....	.....
					Tracey-1.....	1,569	34	1,134	366	1,564	.....	.....	Salt water, 1,465 feet.....
					McClosky.....	1,609	13	1,174	326	1,612	.....	.....	.....
					do.....	1,606	32	1,168	332	1,611	1,640	75	.....
					Kirkwood.....	1,613	23	1,176	324	1,618	1,633	50	.....
					S. Updike, No. 5.....	437	15	1,057	443	.....	.....	.....	.....
					D. Updike, No. 2.....	438	17	1,050	450	1,625	30	.....	.....
					Kirkwood.....	1,608	17	1,170	330	.....	.....	.....	Gas.....
					Tracey.....	438	18	1,094	406	1,557	75	.....	.....
N. W..	5	Haywood.	D. Updike, No. 1.	438	Kirkwood.....	1,490	30	1,052	448	.....	.....	.....	Gas.....
					Tracey.....	1,534	10	1,096	404	.....	.....	30	.....
					McClosky.....	1,601	36	1,163	337	1,690	.....	.....	.....
					Tracey.....	1,518	.....	1,080	420	1,617	75	.....	Gas, 1,518 feet.....
					McClosky.....	1,617	25	1,179	321	1,633	.....	.....	.....
					Tracey.....	438	25	1,047	453	.....	.....	.....	.....
					Kirkwood.....	1,485	32	1,165	335	1,603	1,635	175	.....
					S. Updike, No. 2.....	438	30	1,167	333	1,605	1,651	75	.....
					Walters, No. 1.....	438	15	1,087	413	.....	.....	.....	.....
					Tracey.....	1,525	15	1,087	413	1,600	1,650	Gas	.....

10 Ohio	M. Smith, No. 2	437	Tracy	1,530	10	1,093	407	1,530	50	
			McClosky	1,601	17	1,164	336			
11 Ohio	W. Updike, No. 1	436	Tracy	1,518	17	1,082	418			Gas, 1,518 feet.
			McClosky	1,602	16	1,166	334	1,602	15	
			"Gas"	1,620	10	983	517			
12 Ohio	M. Smith, No. 1	437	Kirkwood	1,470	40	1,033	367			
13 Ohio	Walters, No. 3	436	McClosky	1,600	11	1,064	336	1,600	Gas	Gas, 1,530 feet.
14 Ohio	Walters, No. 7	444	McClosky	1,605	8	985	365			
			do	1,620	20	1,161	339	1,605		
15 Ohio	Walters, No. 5	438	Kirkwood	1,430	15	1,182	318	1,620		Gas, 1,605 feet.
			McClosky	1,603	20	985	314	1,631	65	Gas, 1,628 feet.
1 Ohio	Walters, No. 6	444	Kirkwood	1,430	22	1,159	341	1,615	50	Gas, 1,440 feet.
			McClosky	1,603	22	971	329	1,627		
2 Ohio	Walters, No. 4	435	Kirkwood	1,431	14	995	505	1,447	42	Drilling
3 Ohio	Allen Hrs., No. 1	436	do	1,392	8	956	544	1,406	Dry	Gas, 1,431 feet.
4 Ohio	Allen Hrs., No. 4	437	Kirkwood	1,378	22	942	558	1,420		
5 Ohio	Allen Hrs., No. 3	436	do	1,378	22	942	558	1,420		
6 Ohio	Allen Hrs., No. 2	436	Kirkwood	1,431	14	995	505	1,447		Hole full of salt water, 990 feet.
			Bridgeport	950	40	514	986			
7 Snowden Bros	Petty, No. 2	436	Buchanan	1,155	15	719	781			
			Tracy	1,275	5	839	661			Salt water, 1,280 feet.
			"Gas"	1,330	10	894	606	1,335		Red shale, 1,280 and 1,408 feet.
8 Snowden Bros	Petty, No. 1	436	Kirkwood-1	1,378	22	942	558	1,385		
			Kirkwood-2	1,413	5	977	523	1,413		
			Bridgeport	920	15	434	1,096			Salt water, 800 feet.
			do	1,095	60	484	1,016			Hole full of water, 980 feet.
			Buchanan-1	1,113	8	659	851			
			Buchanan-2	1,185	62	677	823			
			Buchanan-3	1,240	35	743	751			
			Tracy	1,265	10	829	696			
			"Gas"	1,326	10	890	610	1,326		
			Kirkwood-1	1,366	26	930	536			
			Kirkwood-2	1,400	12	964	536	1,400	125	
			Bridgeport	868	20	433	997			
			do	938	35	503	997			Salt water, 870 feet.
9 Snowden Bros	Petty, No. 4	435	Buchanan	1,118	140	683	817			
			"Gas"	1,325	10	890	610			
			Kirkwood-1	1,372	18	837	563	1,375		
			Kirkwood-2	1,402	9	967	533	1,406		
			Bridgeport	870				1,432		
			Buchanan	1,115	100	680	820			Salt water, 885 and 940 feet.
			Tracy	1,230	15	795	705			
			"Gas"	1,310	22	875	625	1,328		
10 Snowden Bros	Petty, No. 3	435	Kirkwood-1	1,367	20	832	568	1,375		
			Kirkwood-2	1,402	12	967	533			
			do	1,402	19	967	533	1,408		
			Kirkwood	1,382	44	947	553	1,387	60	Gas, 1,408 feet.
			do	1,400	19	966	534	1,400	75	
			do	1,415	15	980	520	1,415	170	

S. W.

S. E.

Lawrence County—Petty Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion feet.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.					
36— S. E. . .	2	Ohio.	Longnecker, No. 3.	435 {	Kirkwood.	1,450	5	1,015	485	1,611	1,647	Gas	Gas, 1,450 feet.	
	3	Ohio.	Longnecker, No. 1.	436 {	McClosky.	1,611	7	1,176	324	1,602	1,952	Dry	Gas, 1,602 feet.	
	4	Ohio.	E. Smith, No. 1.	435 {	do.	1,602	43	1,166	334	1,063	1,657	Gas	Gas, 1,498 feet.	
	5	Ohio.	E. Gray, No. 1.	435 {	McClosky.	1,616	22	1,063	319	1,621	1,645	75	Gas	Gas, 1,498 feet.
	6	Ohio.	E. Gray, No. 3.	436 {	Kirkwood.	1,495	20	1,060	440	1,616	1,645	90	Gas	Gas, 1,610 feet.
	7	Ohio.	E. Gray, No. 2.	438 {	do.	1,616	19	1,181	319	1,616	1,635	40	Gas	Gas, 1,610 feet.
					438 {	McClosky.	1,445	15	1,007	493	1,610	1,621	35	Gas	Gas, 1,610 feet. . . . .

INDEX

A			
	PAGE		PAGE
Abandonment of wells in Illinois.....	181	Production of, in Bridgeport Township.....	137
Accumulation of oil.....	16, 18	In Dennison Township.....	137
Under impervious cover.....	22	In Lawrence County.....	106
On LaSalle anticline.....	143	In Petty Township.....	137
In Robinson pool.....	104	Salt water of, in Dennison Township.....	141
Ackman, pumping station at.....	164	In Lawrence Township.....	140
Acknowledgments.....	12	Stratigraphy of.....	106
Albion, prospecting near.....	16	Thickness of.....	106
Altitude of sands, method of determining.....	95	Type area of.....	137
American bottoms, prospecting on.....	16	Bridgeport Township, wells in Kirkwood sand.....	137
Annapolis, gas sold to.....	181	Gas in.....	108, 139
Anticline, definition of.....	22	Gushers in Buchanan sand.....	137
Effect of.....	83	Production.....	135, 137
In Buchanan sand.....	108	Salt water.....	140
In "Gas sand".....	109	Structural relations of.....	137
In Kirkwood sand.....	110	Type area of Bridgeport and Buchanan	
Anticlinal theory, confirmation of.....	11	sands.....	137
Arches in Robinson pool.....	99	Wells in.....	135
Areal extent of oil.....	12, 25, 27	Brown & Hogue, purchased by Ohio Oil Co.....	163
Of oil land in states.....	145	Buchanan, R. O., farm.....	107
Production of oil.....	163	Buchanan sand.....	15
Armitage No. 2 well, record of.....	123	Anticlinal dome of.....	108
Associated Producers Co., pipe lines of.....	166	Cost of drilling to.....	153
Aviston, prospecting near.....	16	Discovery of.....	107
Axis of Illinois basin.....	142	Gas in Bridgeport Township.....	139
		In Lawrence County.....	107
		In Petty Township.....	136
		Production of, in Bridgeport Township.....	137
		In Dennison Township.....	138
		Salt water.....	107
		In Bridgeport Township.....	140
		In Lawrence Township.....	140
		Structure of.....	107
		Type area of.....	107, 137
		Bull wheel, use of.....	152
		Bureau County, gas in.....	182
		Burton Bros. development of Kirkwood sand	
		by.....	109
		Busch and Everett, development of Tracey	
		sand by.....	111
		C	
		Cady, Gilbert, work of.....	28
		California oil land.....	145
		Campbell Hill, prospecting near.....	16
		Capillary action.....	19, 20
		Carbondale formation in Crawford County.....	53
		Stratigraphy of.....	28
		Carlinsville, gas near.....	183
		Prospecting near.....	15
		Carlinsville limestone, correlation of.....	53
		Carlyle oil field, description of.....	16
		Oil prices in.....	169
		Carlyle sand correlation of.....	109
		Carter, L. D., prospecting by.....	14
		Carmel, prospecting near.....	16
		Casey, gas sold to.....	181
		Loading rack at.....	158
		Pumping station at.....	164
		Casey pool, development from.....	146
		Casey, sand, position of.....	29
		Casing, use of.....	155
		Weight of per foot.....	160
		Central Refining Co., Perry King No. 5 well.....	128
		Refinery at Lawrenceville.....	16
		Tank car shipments of.....	166
			9
B			
Bailer, description of.....	154		
Bailey pumping station.....	164		
Bain, H. Foster, general sections by.....	26		
Bakers Lane, loading racks.....	158		
Band wheels, use of.....	152		
Bartels, prospecting near.....	16		
Barren wells in Illinois.....	145		
Base map, use of.....	96		
Bellaire, gas areas near.....	181		
Benoist farm, prospecting on.....	15		
Sand, correlation of.....	109, 182		
Big Four Oil Co., development by.....	106		
Birds, gas sold to.....	181		
Loading racks at.....	158		
Boiler house, use of.....	158		
Bolton, E. C., work of.....	164		
Bond County sand, correlation of.....	109		
Bonus for oil leases.....	147		
Bowers, J. D., No. 7 well, record of.....	129		
Boyd No. 11 well, section of.....	119		
Bramsky, Oscar E., investigations of.....	20		
Bridgeport gas areas.....	181		
Loading racks.....	158		
Pumping station.....	164		
Tank farm.....	165		
Bridgeport Oil Co., development of Bridge-			
port sand by.....	106		
Bridgeport sand.....	15		
Correlated with Pottsville.....	83		
Cost of drilling to.....	153		
Depth of.....	106		
Development of.....	106		
Distribution of.....	106, 137		
Drilling of.....	154		
Initial production in.....	137		
Production, rank of.....	135		

Index—Continued.

	PAGE		PAGE
Cerro Gordo, axis near.....	142	Duncanville pool, development of.....	14
Champaign, gas near.....	183	Day, Dr. David T., investigations of.....	20
Champaign County, prospecting in.....	15	Oil statistics compiled by.....	167
Chester formations, description of.....	30, 31	Decline in shallow fields.....	163
Distribution of.....	31	In Illinois fields.....	181
In Lawrence County.....	83	Decatur, prospecting near.....	16
Kirkwood sand in.....	84, 109	Dennison Township, best wells in McClosky	
Limestone strata of.....	83	sand.....	137
Red shale in.....	84	Drift in.....	82
Salt water in Lawrence County.....	140	Gas in.....	139, 140
Top of.....	29, 82	Kirkwood sand, most productive.....	137
Childress No. 3 well, record of.....	78	Production in.....	135
Christian County, gas in.....	182	Production of Bridgeport sand.....	137
Circulation of oil.....	18, 20	Of Buchanan sand.....	138
Clark County, acreage drawn on by oil wells.....	151	Of Kirkwood sand.....	138
Cost of wells in.....	153	Of Tracey sand.....	138
Gas sand in.....	182	Salt water in.....	141
LaSalle anticline in.....	142	Structural relations in.....	137
Production, daily.....	163	Type area of Buchanan sand.....	107
Prospecting in.....	12	Wells in.....	135
Storage tanks in.....	165	Denny, prospecting near.....	16
Clapp, Frederick G., classification of structure		Derricks.....	152, 153
by.....	23	Derry Township, prospecting in.....	13
Coal fields, selection of well sites in.....	151	Deuchler, W. E., work of.....	12, 94
Cobden, prospecting near.....	16	Development of oil properties.....	146
Cochran, C. T., No. 9 well, record of.....	51	DeWitt County, depth of gas and gas pressure	182
Colchester, gas near.....	183	DeWolf, F. W., work of.....	28
Columnar section.....	84	Diatoms as the origin of oil.....	17
Of Crawford County.....	33	Diffusion of oil through rocks.....	17
Of Lawrence County.....	54	Through Fuller's earth.....	21
Contour lines, use of.....	11, 12, 96	Dip of Buchanan sand.....	107
Of Robinson sand.....	99	Of Kirkwood sand.....	111
Of Honey Creek pool.....	99	Of McClosky sand on LaSalle anticline.....	114
Contract for drilling.....	151	In Petty Township.....	113
Complanter Refining Co., shipments of.....	166, 169	Of Robinson sand.....	100
Correlation of Benoist and Kirkwood sand.....	182	Dome Structure.....	83
Or Bridgeport and Pottsville sands.....	83	Of Buchanan sand.....	108
Of Carlinville limestone.....	53	Of "Gas" sand.....	109
Of "Gas sand".....	108	Of Kirkwood sand.....	110
Of Kirkwood sand.....	109, 182	Drake, J. M., No. 23 well, record of.....	47
Of Robinson sand.....	98	Drift gas.....	26, 183
Of Bridgeport sands.....	82	Drilling, method of.....	154
Cost of drilling wells.....	152, 153, 160	Cost of.....	153
Of operating a lease.....	161	Drive pipe.....	155, 160
Coulterville, prospecting near.....	16	Drole No. 7 well, record of.....	117
Crawford County—		Dry spots in Robinson pool.....	100
Acreage drawn on by oil wells.....	151	Dry holes in Illinois, table of.....	180
Carbondale formations in.....	53	Duncanville pool, general level of.....	100
Columnar section in.....	33	Price of oil.....	167
Cost of wells in.....	153	DuQuoin, prospecting near.....	16
Development in.....	14, 146		
Drift in.....	52		
Extent of pools.....	97		
Gas sand and gas pressure.....	182		
Geology of.....	97, 142		
McLeansboro formations in.....	32, 53		
Pennsylvanian rocks in.....	53		
Pleistocene in.....	52		
Pottsville formation.....	54		
Production, daily.....	163		
Prospecting in.....	13		
Shallow sand in.....	99		
Stratigraphy of.....	32, 52		
Structure of.....	99		
Storage tanks in.....	165		
Crawford County Oil, Gas & Coal Co., work of.....	13		
Cross-section A-A.....	114		
B-B.....	123		
C-C.....	125		
D-D.....	130		
Cross-section of Lawrence County.....	114		
Cross-sections, use of.....	11, 96		
Method of construction.....	114		
Cumberland, pumping station at.....	164		
Cumberland County, production in.....	163		
Gas found and gas pressure.....	182		
Cummings No. 12 well, record of.....	70		
Curtis, C. F., No. 8, well, record of.....	44		
Curtis & Aiken, record of Fitch No. 17 well.....	119		
Cypress sandstone, unfavorable.....	31		

D

E

F

Index—Continued.

G		PAGE
Gas, areas of.....	118, 182	
Depths of.....	182	
Gravitation of.....	22	
In, at or near:		
Bridgeport sand.....	140	
Bridgeport Township.....	139	
Buchanan sand.....	139	
Carlville.....	183	
Dennison Township.....	140	
Drift formations.....	26	
"Gas sand".....	139	
Jacksonville.....	183	
Kirkwood sand.....	139	
Lawrence Township.....	140	
LaSalle anticline.....	143	
McClosky sand.....	139	
Morgan County.....	183	
Petty Township.....	138, 139	
Robinson pool.....	99, 103	
Tracey sand.....	139	
Pressure of.....	20, 182	
Production of in Illinois.....	181	
Gas, sold to:		
Annapolis.....	181	
Birds.....	181	
Bridgeport.....	181	
Casey.....	181	
Flat Rock.....	181	
Hutsonville.....	181	
Marshall.....	181	
Martinsville.....	181	
New Hebron.....	181	
Oblong.....	181	
Olney.....	181	
Palestine.....	181	
Pinkstaff.....	181	
Porterville.....	181	
Robinson.....	181	
Stoy.....	181	
Sumner.....	181	
Vincennes.....	181	
Westfield.....	181	
Structural relations of.....	138	
Use of.....	147, 181	
"Gas sand," absent along D-D cross-section.....	130	
Anticline dome of.....	109	
Correlation of.....	108	
In, at or near:		
Bridgeport Township.....	108, 139	
Lawrence County.....	83, 108	
Marion County.....	182	
Petty Township.....	139	
Sandoval.....	182	
Structure of.....	109	
Thickness of.....	108	
Gas wells, price of per year.....	147	
Geological sections of central Illinois.....	26	
Of southern Illinois.....	26	
Geologic structures.....	22	
Georgetown, Ky., Indian Refining Co., at.....	166	
Gillespie, E. N., record of Smith No. 24 well.....	130	
Gilpin, J. Elliot, investigations of.....	20	
Grades of oil.....	167	
Grafton, prospecting near.....	16	
Gravitation of oil, gas and water.....	22	
Gravity lines to leases.....	164	
Gray, W. B., record of No. 2 well.....	63	
Greenville, correlation of sand.....	109	
Gas area near.....	182	
Prospecting near.....	16	
Griswold, W. T., theories of oil accumulation.....	24	
Gushers from McClosky sand.....	135	
H		
Hamilton County, Illinois basin in.....	142	
Hansen, prospecting near.....	16	
Hardinville, gas areas near.....	97, 181	
Hardinville quadrangle, description of.....	86, 87, 91	
Heyworth, drift gas near.....	183	
Henry No. 1 well, record of.....	133	
Herrick, prospecting near.....	16	
Herrin coal and Carbondale formation.....	28	
Hoblitzell, J. J., work of.....	14	
Honey Creek pool, opening of.....	14	
Structure of.....	99	
Hutsonville, gas sold to.....	181	
I		
Illinois, natural gas in.....	181	
Wells drilled in.....	145, 181	
Rank as a gas state.....	181	
As an oil state.....	145	
Stratigraphy of.....	25	
Structure of.....	32	
Illinois basin, axis of.....	142	
Illinois oil fields, efficiency of.....	145, 146	
Extent of.....	145	
Saturation theories for.....	24	
Impromptu Exploration Co., prospecting of.....	15	
Independent oil companies.....	166	
Indian Refining Co., operations of.....	163	
Initial productions in Illinois.....	101, 135, 180	
Of Kirkwood sand.....	109	
Of Robinson sand.....	101	
International Oil and Gas Co., development by.....	112	
Interval between:		
Buchanan sand and "Gas sand".....	108	
Chester and "Gas sand".....	83	
Kirkwood sand and "Gas sand".....	110	
Kirkwood and Tracey sands.....	111	
Tracey sand and Chester.....	84	
Tracey and McClosky sands.....	113	
Investments in oil properties.....	162, 163	
Iola, prospecting near.....	16	
Irick, William, wells of.....	13	
Iuka, prospecting near.....	16	
J		
Jacksonville, oil and gas wells near.....	183	
Jamestown, Ind., pumping station at.....	165	
Jennings Oil Co., purchase of.....	163	
Jerseyville, prospecting near.....	16	
Johnson, H. H., work of.....	12	
Jones, J. C., work of.....	12	
Jones, D. C., wells on farm of.....	13	
K		
Kane, prospecting near.....	16	
Kirkwood, Thomas, development of Kirkwood sand.....	109	
Kirkwood, R. M., No. 7 well, record of.....	69	
Kirkwood sand.....	15	
Anticline dome in.....	110	
Correlation of.....	109, 182	
Development of.....	109	
Drilling costs.....	153	
Dips of.....	111	
Extent of.....	109, 111, 136	
In Bridgeport Township.....	137, 139	
Chester formations.....	84	
Dennison Township.....	137, 140, 141	
Lawrence County.....	109, 135, 138	
Lawrence Township.....	137, 139, 141	
Petty Township.....	139, 140	
Initial production of.....	109	
Intervals of.....	110, 111	
Production of.....	135	
Structure and thickness of.....	110	
Time required to drill to.....	153	
Type locality of.....	110	

Index—Continued.

L		PAGE
LaSalle anticline		32
Course and extent of		142, 144
In, at or near:		
Champaign County		15
Clark County		142
Sadorus		142
St. Francisville		142
Tuscola		142
Oil and gas on		143
Prospective pools on		144
Lawrence County, acreage drawn on by oil wells		151
Bridgeport sand of		106
Buchanan sand of		107
Chester rocks of		83
Cost of drilling in		153
Development of		15
Drilling time in		153
Gas, depth of		182
"Gas sand" in		83, 108
Gas wells in		130
Geology of		82, 83, 105, 142
Importance of		135, 143, 161
Kirkwood sand of		109
McClosky sand of		112
Production, initial		135, 136
Production of sands		105, 135, 163
Prospective pools in		144
Salt water in		140
Storage tanks in		165
Stratigraphy of		54, 82
Structure of		106, 114, 138, 140, 143
Tracey sand of		84, 111
Wells drilled in		135
Lawrence Township, Buchanan sand in		107, 137
Gas in		140
Kirkwood sand, type area in		137
McClosky sand in		137
Productions, initial		135
Salt water in		140, 141
Structural relations in		137
Wells in		135
Lawrenceville, gas sold to		181
Loading racks at		158
Refinery at		166
Lease, cost of operating		161
Equipment		147, 157
Use of		146
Leasing of oil properties		146, 147, 148
Lee County, gas in		182
Lee Oil Co., purchased by Ohio Oil Co.		163
Lenses of oil sands		98, 109
Levels in the oil field		87
Lima, oil pumped to		165
Limestone as the source of oil		18
Lindley, correlation of Kirkwood sand		109
Litchfield oil and gas sands		12, 13, 29
Loading racks, construction of		158
Locke level, use of		94
Logs of cross-section A-A		115
B-B		123
C-C		125
D-D		130
Lovington, axis near		142
M		
Macoupin County, prospecting in		15
Marion County, correlation of Benoist sand		109
"Gas sand" in		182
Prospecting in		15
Storage tanks in		165
Marissa, prospecting near		16
Martin Township, dome in		103
Marshall, gas sold to		181
Prospecting near		16
		PAGE
Martinsville, gas sold to		181
Loading racks at		158
Pumping station at		164
Mascoutah, prospecting near		16
McCleave, S. G., No. 4 well, record of		71
McClosky, M., farm		112
McClosky oil, sulphur in		115
McClosky sand		15
At, in or near:		
Bridgeport Township		139
Dennison Township		137, 140
Lawrence County		112, 135, 138
Lawrence Township		137
Petty Township		139
Ste. Genevieve formation		31, 85
Description of		85, 113
Dips in Petty Township		113
Drilling, cost of		153
Time of		153
Extent of		112
Origin of oil from		18
Production in Bridgeport Township		137
Production, initial		113, 135
Salt water of		140, 141
Structural relations of		113, 136
McLeansboro formation in Crawford County		32, 53
McIlroy, prospecting by		15
McOrt No. 1 well, record of		131
McPherson No. 3 well, record of		67
No. 4 well, record of		68
Migration of oil		18
Mississippian rocks, oil sands in		29
In Lawrence County		83
Missouri-Illinois Oil Co., shipments of		166, 169
Montgomery County, prospecting in		12
Montpelier, pumping station at		165
Morgan county, gas wells in		183
Muchmore, pumping station at		164
Muddy Creek, pumping station at		164
N		
Nashville, prospecting near		16
Natural gas in Illinois		181, 183
Origin of		18
New Hebron, gas sold to		181
Newlin, L. R., No. 21 well, record of		38
Niagara limestone, oil in		13
Nitroglycerine, use of		155, 156, 157
Northern Illinois, geologic sections of		26
North Fork, pumping station at		164
North Fork Oil Co., purchased by Ohio Oil Co.		163
Nuttall, S. B., No. 5 well, record of		124
O		
Oakland, prospecting near		14
Oblong, gas sold to		181
Loading racks at		158
O'Donnell No. 28 well, record of		62
Ohio Oil Co., acknowledgment to		12, 33
Discovery of Buchanan sand by		107
Operations of		146, 163, 164, 165, 166, 169, 175
Oil, accumulation of		16, 18
Amount of in Illinois		145
Circulation of		18
Development of, in Illinois		12
Diffusion of		17
Geological work on		24, 95
Gravitation of		22
In St. Louis limestone		31
Origin of		16, 18
Specific gravity of		20
Structural relation of		100
Storage of		147, 157, 164
Sulphur in		21
Value of, in Illinois		145

Index—Continued.

	PAGE		PAGE
Oil fields, description of.....	97, 143	Prospective pools of Crawford and Lawrence counties.....	144
Levels in.....	87	Pull rods, use of.....	159
Oil leases, specifications of.....	148	Pumper, wages of.....	161
Oil sands, extent of.....	27	Pumping equipment.....	159
In Mississippiian rocks.....	29	Pumping stations in Illinois.....	164, 165
Oil tanks, use of.....	157	Pure Oil Co., pipe lines of.....	166
Oil wells, acreage drawn on.....	151		
Elevation of.....	94		
Near Litchfield.....	13		
Oilfield, loading racks at.....	158		
Prospecting near.....	14		
Oklahoma, extent of petroleum land.....	145		
Old Ripley, prospecting near.....	16		
Olney, axis of Illinois basin near.....	142		
Gas sold to.....	181		
Prospecting near.....	16		
Omaha, prospecting near.....	36		
Ordovician system.....	12		
Origin of oil and gas.....	16, 17, 18		
P		R	
Palestine, gas sold to.....	181	Randolph County, correlation of sand.....	109
Parker & Edwards, purchased by Ohio Oil Co.....	163	Prospecting in.....	13
Parker Township, prospecting in.....	12, 14	Rank of Illinois as gas state.....	181
Patton, prospecting near.....	16	Rank of producing states.....	170, 171
Pennsylvania, extent of petroleum land in.....	145	Red shale, distribution of.....	28, 84, 109
Pennsylvania rocks, extent of.....	27	Richview, prospecting near.....	16
In Crawford County.....	53	Riddle Oil Co., purchased by Ohio Oil Co.....	163
In Lawrence County.....	82	Rig, building of.....	152
Pepple, A., No. 7 well, record of.....	77	Robinson, gas sold to.....	181
Perkins No. 16 well, record of.....	122	Loading racks at.....	158
No. 17 well.....	121	Refinery at.....	166
No. 19.....	75	Robinson Oil Co., refinery at Robinson, Ill.....	166
No. 22.....	120	Robinson pool, accumulation in.....	104
No. 28.....	120	Anticlines in.....	99
Perry King No. 5 well, Cen. Refin. Co., record of.....	128	Development of.....	14
Petty No. 1 well, record of.....	116	Extent of.....	97, 99, 100, 104
No. 3 well, record of.....	117	Gas in.....	103
Petty Township, Bridgeport sand in.....	137	Production of.....	100, 103
Buchanan sand in.....	136	Salt water in.....	103, 104
Drift in.....	82	Structure of.....	99
Gas in.....	138, 139	Syncline in.....	99
"Gas sand" in.....	108, 110, 136	Robinson sand, absence of.....	98
Kirkwood sand in.....	110, 136, 139	Correlation of.....	98
McClosky sand in.....	113	Description of.....	97, 98
Oil in.....	136	Gas in.....	99
Production, initial yield.....	135, 136	Oil in.....	100
Salt water in.....	140	Production of.....	100
Structural features in.....	113, 136	Thickness of.....	98, 100
Structural relations of oil and gas.....	139	Robinson Township, prospecting in.....	13
Tracey sand in.....	139	Gas in.....	103
Wells in.....	135	Rock pressure, effect of.....	20
Phillips, J. S., prospecting of.....	14	Roger and Dibble, shipments of.....	166, 169
Pike County, gas in.....	13, 16, 182	Royalty, payment of.....	147
Pinkstaff, gas sold to.....	181		
Pipe-lines, use of, in Illinois.....	148, 167, 169		
Piper No. 9 well, record of.....	118		
No. 10 well, record of.....	81		
Pleistocene in Crawford County.....	52		
In Lawrence County.....	82		
Pocahontas, prospecting near.....	16		
Pollution of streams by waste oil.....	160		
Porosity of sands.....	23		
Portable drilling rigs, use of.....	153		
Porterville, gas sold to.....	181		
Pottsville formation, description of.....	29		
In Crawford County.....	54		
In Lawrence County.....	82		
In Macoupin County.....	15		
Salt water in.....	29, 140		
Structure of.....	29		
Studies of.....	29		
Thickness of.....	29		
Pressure of drift gas.....	183		
Of gas in Robinson pool.....	103		
Of oil in pipe lines.....	165		
Princeton, Ind., prices of oil at.....	169		
		S	
		Sadorus, anticline near.....	142
		St. Francisville, anticline near.....	142
		Salt water in:	
		Robinson pool.....	104
		Bridgeport sand.....	140, 141
		Bridgeport Township.....	140
		Buchanan sand.....	107
		Dennison Township.....	141
		Kirkwood sand.....	140, 141
		Lawrence County.....	140
		Lawrence Township.....	140
		McClosky sand.....	140, 141
		Petty Township.....	140
		Pottsville formations.....	29, 140
		Synclines.....	103, 104, 140
		Tracey sand.....	141
		Salt water, siphoning of.....	159
		Sandoval, "Gas sand" near.....	182
		Oil prices at.....	169
		Prospecting near.....	15
		Pumping station at.....	164
		Sands, correlation of.....	95
		Names of.....	95
		Porosity of.....	23
		Saturation line of sands.....	143
		Savage, T. E., work of.....	28
		Seed, H. K., No. 1 well, record of.....	132
		No. 2 well, record of.....	131
		No. 7 well, record of.....	61
		Shale as the origin of oil.....	17, 18, 21
		Shallow sands, distribution of.....	29, 99, 106
		Shiltz, M., No. 7 well, record of.....	33

